

CHOICE

Lifting the lid on insulation

Read this report before you choose



Are you getting
enough **calcium** to keep
your bones healthy?

Find out in our quiz

Fluoride in water:
friend or foe?

TESTS: Vacuum cleaners: dust and asthma
● Impact drills ● Aluminium foil and plastic wrap

Your rights or their profits?



Mara Bún

What happens when the government is caught between two priorities: making money versus consumer protection? The bottom line tends to win out — and this is particularly the case when it comes to the massive upcoming sale of Telstra.

Telstra's privatisation comes at a time of further deregulation of telecommunications — a time when strong consumer protection safeguards are particularly necessary. But consumer protection can cut Telstra's profits — which will make it less valuable when it's privatised and floated on the Stock Exchange. The government needs to consider more than just a hefty float if deregulation is to work in the consumer interest

Take the case of directory assistance, or 013 services. Telstra justified its recent push to introduce 013 charging as an attempt to cut down on 'convenience users'. Telstra claims some consumers (less than 10%) have a habit of using this operator service a lot, instead of looking up numbers the old-fashioned way and only using 013 when it's really necessary.

In fact, the reality is that consumers have always paid for 'free' 013 services. We have paid through our line rental fees, which Telstra promises to reduce to make the proposal 'revenue neutral' — the cost of the rebate will be offset for Telstra by its new income from the 013 service, and the upshot will be that the people who use it the most will pay the most. Telstra has said it will give exemptions to people with disabilities, for whom the White Pages are not an option. Directory assistance for numbers in other area codes and from payphones will still be free.

We have no problem with the idea of 'user pays' in this instance — but the devil is in the detail, which we have carefully analysed. Telstra's proposal charges too much for using directory assistance compared to the rebate offered, and growing profits will be the result. A 25 cent charge — not the proposed 50 cents — is all that can be justified.

We expect other attacks on consumer safeguards as the government's financial windfall of the decade approaches. There will be new services that infringe people's rights to privacy, such as calling number display. And price controls, which help make sure all Australians benefit from deregulation, regardless of their income or location, are also under threat.

It's hard for governments to compromise income for consumer well-being. But it should be done.

Mara Bún,
Manager, Policy and Public Affairs

Your letters

We welcome the letters you send us — please always include a daytime telephone number so we can contact you quickly if we want to follow your letter up. We're sorry we can't personally answer every letter we receive, but we do use them in our research. Thanks for taking the time to keep in touch.

Write to us at CHOICE, 57 Carrington Road, Marrickville 2204.

Phone us on (02) 9577 3399.

Fax us on (02) 9577 3355.

email us at ausconsumer@choice.com.au

World Wide Web address: <http://www.sofcom.com.au/AU/>

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Cover photo: Kent Mears



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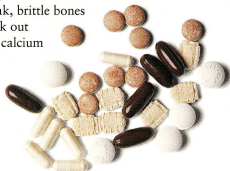
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Coming in the next three issues:

Tests: Washing machines, doner kebabs, fax machines, pramettes, smoke alarms, reverse-cycle air conditioners, fertilisers, quality of canned food, petrol mulching lawnmowers, ladders update, fish.

◀ *Shopping rights — if you break it, do you have to consider it yours?*

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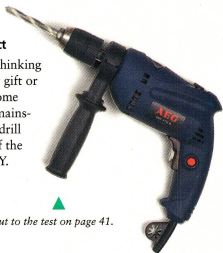
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Some vacuum cleaners claim to solve asthma and dust allergy problems — but at a price. We found one model which could do the job for less than half the price of the most expensive.

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Whether you're thinking of a Father's Day gift or buying for the home handyman, a mains-powered impact drill can make light of the most 'boring' DIY.



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We try to bring you tests and reports in the planned month, but sometimes have to move an article because of problems that occur during testing and research, or for lack of space in a particular issue. We apologise if this causes any inconvenience.

The problems of buying a mobile phone as a gift

A MOBILE PHONE MAY seem like the perfect gift for a friend or relative, but it's a gift with a catch. If you sign a contract to access the mobile network, there's an ongoing commitment to pay monthly charges. As one angry consumer who phoned us found out, if you sign the contract for a gift phone, you're accepting legal responsibility for it and the associated charges — if your friend can't (or won't) pay the monthly bill, you'll be held liable.

There are many different ways to buy a mobile phone. Usually you sign up for a 'plan' for several hundred dollars a year, in which the cost of the handset itself is 'hidden' in the monthly access fees, etc, that go along with the deal. Your other main option is to pay the full retail price of the phone (which

could be upwards from around \$400) and get a phone with no strings attached — your friend is then free to choose the call plan that best suits their needs.

There's no cooling-off period for the purchase of mobile phones, so if you've signed up with a long-term contract but your friend doesn't like or need the phone, you're stuck with the responsibility — or with a friend who's too embarrassed to tell you that they don't want the phone or the monthly charges.

So either cross mobile phones off your gift list or make sure the recipient understands the nature of the long-term commitment and the ongoing charges they'll have to pay, and has a chance to choose their own 'plan' from the dozens of options available.



A mobile phone can be a gift with a catch — don't get caught.

Fanning the flames



MARK SEERY OF NSW CAME across this product in a supermarket — it appears on first impression to be a domestic fire extinguisher. In fact, it's a US-made aerosol carpet stain remover, *Chem-Dry Stain Extinguisher*. The canister is not only shaped a lot like a fire extinguisher, but has the word 'Extinguisher' displayed prominently and a picture of a character wearing a fireman's hat.

Packaging like this is not only misleading, but potentially dangerous — the contents are flammable. If it was inadvertently grabbed and used on a fire, by a child for instance, the user could sustain serious burns, not to mention fuel the fire.

Mark wrote to the Australian distributor of Chem-Dry about his concerns — and they agreed. In

response, the manufacturer is changing the printing on the packaging by getting rid of the fireman's hat and changing the name to *Stain Eliminator*. The changes are in progress now, and the new packaging should be on the shelves in six months or so.

If you have concerns about a product, why not write to the manufacturer? You may not get a satisfactory result, but it's certainly worth trying — as Mark discovered.

Corrections

Cordless phones: no strings attached

CHOICE, April 1997

In the profiles on page 27 we said the **PANASONIC KXT4026AL** and **KXT4046AL** cordless phones have a volume control for the handset ring, but the ring can't be switched off completely. In fact, the handset ring can be switched off by pressing '0' while pressing the volume/ringer button until you hear two beeps.

Getting out of the transaction account trap

CHOICE, May 1997

In the table on page 22 (*Deeming accounts: some examples*), footnote E referred to the interest rate on the **NAB Retirement New** account. This footnote should have read "0.25% with less than \$2000", rather than "less than \$1000" as printed.

Please note, however, that rates on some of these accounts, including the **NAB** account, have already changed.



Supermarket slip-up

WITH THE END OF ONE-cent and two-cent pieces, we all expect cash payments to be rounded up or down to the nearest five cents. But why round electronic transactions?

Now supermarket customers irritated by stores rounding the electronic purchase amount have had their concerns heard, although some stores have admitted they won't be fixing the problem straightaway.

Del Kelly, from Maroubra, NSW, wrote to CHOICE, pointing out that both Coles

and Franklins had violated national rounding guidelines, which call for the exact amount to be electronically debited.

Franklins' EFTPOS manager Lionel French admitted the store had received complaints about electronic rounding, but blamed equipment: "We wouldn't do it if we didn't have to but it's the way the chip in our registers is built."

He says the company may look at remodelling its registers in future to adhere to the guidelines.

Some smaller chains' registers, including Jewel Food Stores and Campbells Cash and Carry, automatically round all purchases as well.

Coles recently reversed its policy on electronic rounding to bring it in line with the guidelines. All Coles stores should be charging the precise amount via cheques, credit cards and EFTPOS within the next few months as it upgrades its registers.

Other supermarket chains, such as Woolworths and Safeway, already debit the exact amount with electronic transactions.

Unlimited edition?

THREE YEARS AGO subscriber Peter Simpson saw an ad for a Three Stooges "limited edition ... imported ... heirloom collector plate", designed by an "award-winning artist ... exclusively from Franklin Mint". The ad stated that the plate would be "closed forever after just 45 firing days" and there was a limit of "one plate per collector".

Peter thought he'd get in quick and buy the gift for a friend who was mad keen on the Three Stooges.

You can imagine his surprise when he saw the same plate being advertised three years later.

It turns out that the 45 firing days aren't necessarily in a row and that Franklin Mint fires to fill demand. In other words, it would use a few firing days now, and if that was sufficient to fill current orders, save the other firing

days for a later date. Peter Simpson's plate was numbered 3779, but Franklin Mint wouldn't tell CHOICE how many Three Stooges plates there were in the world, as this was "commercially confidential".

While Franklin Mint doesn't believe its ad is misleading, the Australian Competition and Consumer Commission (ACCC) is not so sure. It's raising the matter with the company to see if the ads can be reworded.

Franklin Mint isn't the only company that uses this wording — and the ACCC is seeking to make sure any solution to the problem is applied industry-wide.

In the meantime, next time you buy anything that's a 'limited edition', it's worth bearing in mind that there may be more of them around than you think.



Please check current interest rates before making a decision.

In addition, in the section on cash management trusts on page 23, our example referred to a fee of \$1 per deposit into a BT trust at Westpac branches. However, this \$1 fee applies only if you use a pre-encoded deposit slip, provided by BT. If you don't use this slip you'll be charged Westpac's standard service charge for funds transfer — \$4 for Westpac account customers, \$10 if you're not a customer.

TEST REPORT

Insulating your home is widely recognised as one of the best household investments you can make. Unfortunately, that's where the unanimity ends. When it comes to choosing the best insulation material, you may get caught in the ...

Battle of the fibres

None of the loose-fill wool insulation products tested could pass CHOICE's fire-performance test.



OUR VERDICT

■ Fibreglass or polyester batts and loose-fill cellulose can all provide good ceiling insulation and are adequately fire- and insect-resistant.

However, when you have loose-fill insulation installed, you need to make sure you get the R-value you need and you're paying for (see page 10).

■ Our tests suggest that wool insulation products currently ignite and burn more readily than the other types of insulation tested (see pages 7 to 8). On this basis, we can't recommend any of the wool products we tested — particularly if you live in a bushfire-prone area.

INSULATING YOUR HOME WILL BENEFIT you in more than one way:

■ Insulation will make your home more comfortable: you can keep it warmer in winter and (if you use it right; see *Installing ceiling insulation*, page 10) cooler in summer.

■ Insulation may save you money in the long run: you'll be able to recover the initial expense of the installation through energy savings, especially in colder parts of Australia.

■ Insulation helps to protect the environment: you'll use less energy for heating and cooling, reducing the amount of carbon dioxide and other air pollutants you produce.

■ Insulation absorbs sound and will reduce noise levels in your home.

"In 1993, when we were living in south-west WA, we had cellulose insulation installed in our roof (90 m²) for \$600 — the best money we spent on the house. Our estimated energy savings were \$90 per year. Another benefit was the reduction of noise coming from outside, such as traffic and wind."

T Snow, Nhulunbuy, NT

However, choosing the right insulation material can be a difficult task. You have to compare their thermal (insulation) performance, fire retardancy, any potential health hazards and — last but not least — cost.

According to the manufacturers in this test (see Table 1 on page 9), insulating an average ceiling of 120 m² to an R-value of 2.5 (see page 10) will cost you around:

■ \$600 for fibreglass batts (installed by you; add \$120 if installed by the supplier).

■ \$700 for polyester batts (installed by you; add \$160 if installed by the supplier).

■ \$700 to \$1100 for loose-fill cellulose (usually installed by the supplier).

■ \$1000 to \$1450 for loose-fill sheep's wool (usually installed by the supplier).

Competition between the manufacturers of the most common insulation materials is fierce and their advertising not always objective. Aggressive sales techniques also contribute to the confusion that strikes many consumers when they try to compare the pros and cons of the different materials.

"I wanted time to think about his offer, and that's when the whole thing became very unpleasant. The salesman offered me a good deal if I decided then and there. He said the price would go up if I didn't sign now. I didn't like this pushiness."

J N Light, Chapel Hill, Qld

"This salesman was a home shopper's nightmare! He asked us how his initial quote of \$2000 compared to others. We told him it was double one of

the others. His final offer was \$1100. How can a job be worth \$2000 and 15 minutes later be worth only \$1100? What made us even more uneasy was that he refused to put his quote into writing."

R and J Sercombe, North Richmond, NSW

Helping you choose

This report is designed to shed light on the battle for your roof space. What's an R-value? on page 10 explains how to choose the right level of insulation for your area and home. We also report on our tests of the fire safety of 11 insulation products made from different materials (for more information on them, see *What materials are available?*, page 9) and, where applicable, their insect resistance. We tested:

- Four wool loose-fill products and one wool/polyester blanket. Two of these products were licensed under the 'Woolmark' scheme (see page 9 for details).
- Four cellulose loose-fill products purchased from manufacturers (all licensed by Standards Australia Quality Assurance Services; see page 9 for details) in four different states.
- One fibreglass batt. We're confident that for the purpose of fire testing, one sample is representative of all Australian fibreglass insulation products — and insects don't eat fibreglass at all.
- One polyester batt, as this material has only a relatively small market share.

Insulation and fire

Many materials in your house are flammable and have the potential to ignite and support a fire. The NSW Fire Investigation Unit analysed 3085 house fires in 1993/94. While 333 of these fires were attributed to 'soft goods' (such as bedding and curtains) catching fire and 274 to 'furniture and utensils', only 11

fires were due to insulation materials igniting first.

However, there are situations where the fire retardancy of insulation is important — for example, if you live in a bushfire-prone area where flying embers could enter the roof space, or when you work in the roof space using, say, an oxy-torch. Other risks can be reduced by installing the insulation properly (see *Installing ceiling insulation*, page 10).

Roof fire test

We tested the fire performance of the 11 products in a mock-up of a typical roof/ceiling construction in hot-weather-like conditions (see Table 1 for results). We simulated three scenarios that — according to the Australian National Fire Incident Statistics 1991-92 — are the most likely causes of ceiling fires:

- An electrical short circuit.
- A fire penetrating the eaves from the outside (for example, embers from a bushfire or burning leaves in the gutter).
- A dropped oxy-torch (for example, used by a plumber working in the roof space).

Ideally, insulation materials shouldn't ignite at all. And if they ignite, they shouldn't spread flames capable of igniting the roof timbers — the latter was our fire test safety criterion.

■ **Products that passed the test:** The fibreglass batt, the polyester batt and all the cellulose loose-fill products passed the test. The fibreglass and polyester batts didn't cause any damage to the roof structure at all in any of the scenarios, nor did one of the cellulose loose-fills which was installed with a spray-on surface binder claimed to contain an additional fire-retardant. These products would have required only localised replacement to return the roof insulation to an as-new state.

The quotes, shown in *italics*, that you'll find throughout the article are from subscribers who wrote to us about their experiences with insulation. We received dozens of interesting letters that helped us when researching this article. **Thanks to everyone for your help.**

Problem and solution

Heat transfer

It's a law of nature that heat always travels from warm areas (for example, the heated inside of your home) to cold areas (for example, the winter air outside your home) — until both areas have the same temperature.

Heat can be transferred in three ways:

- **Conduction:** This is direct heat transfer through solid materials. For example, a poker that's partially thrust into an open fire will gradually become hot along its whole length due to conduction.
- **Radiation:** This is heat transfer from a warm body to a cold one through direct radiation. The air between the bodies isn't warmed up in this process. For example, if you stand in front of an open fire, its radiation will warm you although the air around you is cold.
- **Convection:** This is heat transfer due to heated air that moves about — usually upwards. The smoke of an open fire, for example, is carried upwards by convection currents.

How insulation works

Insulation reduces the heat transfer through the building structures of your home: in winter from the warm, heated inside to the cold outside, and vice versa in summer.

- **Bulk materials,** such as fibreglass or polyester batts or blankets and cellulose loose fill or sheep's wool products, influence all three methods of heat transfer. They rely on small pockets of air trapped by the fibres or fluff, which reduce conduction and convection. Bulk insulation also provides a physical barrier to radiation.
- **Reflective materials,** such as aluminium foil laminates, mainly influence heat radiation: their shiny surface reflects most of the radiant heat away. Reflective materials installed in the ceiling are more efficient at reducing heat gains in summer than preventing heat losses in winter. They're often used as roof sarking (a sheet of reflective insulating material laid under the roof itself) which reduces air flows and prevents water entry (see the diagram on page 11).

INSULATION

The three other cellulose loose-fills caused some minor damage to the ceiling lining because they tended to smoulder after the fire source had been removed. While this wouldn't ignite the roof timbers, you might have to replace all the insulation between the joists where the fire source was.

■ **Products that failed the test:** All the wool products burnt extensively and caused relatively rapid flame spread in all directions. The flames ignited the roof structure, causing damage that would have required repair — and, of course, the fire could spread if undetected.

Standard fire test

There is an Australian standard for the fire performance of building materials. In this test, a sample of the material is mounted vertically, in a wire frame where necessary, and then brought close to a heat source.

Some fire experts say this method is particularly inappropriate for loose-fill ceiling insulation materials, because the test sample is compressed by the wire frame. This, to a certain degree, closes the air pockets which are essential for the insulating effect. So a sample of insulation material may be tested in a compacted form rather than as the fluffy material it's supposed to be, and the reduced amount of oxygen around the fluff and fibres means it's likely to be more resistant to fire than it might be in a real-life situation.

However, as it's the only standard fire performance test for building materials and the 'Woolmark' scheme requires licensed products to meet this standard, we tested all products that failed our roof test (all the wool products) according to its specifications — even though this was likely to be a less severe test than our own. In addition, we randomly included two of the cellulose products as a check.

Four wool products failed this standard test too — one of them with the 'Woolmark' licence (see Table 1).

We asked the president of the Australian Wool Insulation Association (AWINA), Les Slater, for a comment on our fire test results: "... If wool is properly scoured and treated to remove all lanolin [a fat contained in wool] it performs satisfactorily [in fire performance tests]." However, he adds: "Current research by AWINA members proves the introduction of basic chemical additives gives a higher-performance protection against the flammability of wool under extreme conditions." Some wool insulation manufacturers told us they were taking steps to improve the fire retardancy of their products.

Our test results cast serious doubts on the fire safety of wool insulation products at present. Particularly if your home already faces higher than av-

erage fire risks (for example, if you live in a bushfire-prone area), we can't recommend you install any of the wool products we tested.

Insulation and vermin

■ If you live in an area with a rodent problem it's unlikely that any particular insulation material will stop your home from becoming infested. While rats and mice may not feed on the materials, they won't be deterred by any of them and may even use them for their own nests.

■ The borax and boric acid which are applied to cellulose insulation as a fire retardant should deter silverfish and cockroaches.

■ A problem unique to wool insulation is the potential attack by clothes moths and carpet beetles — insects that can digest wool.

Because of this, the 'Woolmark' scheme and AWINA require wool insulation products to be appropriately chemically treated.

We tested the five wool products according to the Australian standard for resistance against carpet beetles. Only one passed the test. The other loose-fill products — one of them with a 'Woolmark' licence — were happily eaten by the insects. The wool/polyester blanket scored a 'borderline' result in the first test, and failed a retest.

AWINA admits to problems with the treatment of products: "The unsatisfactory test results [found] by CHOICE magazine [regarding vermin resistance] indicate the quality assurance and control breakdown in the manufacturing process of wool insulation. The chemicals used ... are extremely effective ... but the application methodology of those chemicals in the manufacturing process is the key to total vermin resistance," says Les Slater.

Insulation and health

■ No health risks are known for wool and polyester insulation.

■ Cellulose loose-fill can contain a lot of dust. While some suppliers will 'seal' the insulation layer with a binder to prevent the dust and the fibres from blowing around in a ventilated roof space, cellulose may still not be the best choice if you suffer from dust sensitivity. If you install it yourself, we recommend you wear a tight-fitting, two-strap dust mask.

■ There's been an ongoing debate whether mineral fibres such as fibreglass can be inhaled and cause lung damage and even lung cancer.

While some studies found an increased risk of lung cancer in workers who were exposed to mineral fibres over a long period of time in the early days of the industry, there's no evidence that householders who have mineral fibre insulation installed or install it themselves put their health at risk.

Table 1. Insulation products on test

Product (in alphabetical order within types)	Manufacturer / distributor	Type of insulation	R-values available (claimed)	Claimed R-values supported by test reports*	Roof fire test	Standard fire test	Standard carpet beetle test
PASSED FIRE-PERFORMANCE TESTS AND IS INSECT-RESISTANT							
ENERGYMASTA	Fibre Fluff Home Insulation	Cellulose loose-fill	2 to 4	✓	Pass	Pass (F)	na
SYDNEY CELLULOSE	Sydney Cellulose Insulation	Cellulose loose-fill	2.5		Pass	nt (F)	na
INSUL-FLO	The Cellulose Insulation Manufacturing Co	Cellulose loose-fill	2 to 4	✓	Pass	Pass (F)	na
THERMALCELL INSULATION	Thermalcell Insulation	Cellulose loose-fill	2 to 4	✓	Pass	nt (F)	na
CSR BRADFORD Gold Batts (A)	CSR Bradford	Fibreglass batt	2 to 4	✓	Pass	nt (F)	na
TONTINE TSBS (B)	Tontine Industries	Polyester batt	1.5	✓	Pass	nt (F)	na
NOT RECOMMENDED: FAILED FIRE-PERFORMANCE AND/OR INSECT-RESISTANCE TESTS							
FIBREXAC (C)	Jumbuck Wool Insulation	Wool loose-fill	2 to 4		Fail	Pass	Fail
MR WOOLLY All Wool Insulation (C)	Mr Woolly All Wool Insulation (D)	Wool loose-fill	2.5 (E)		Fail	Fail	Pass
THERMAFILL	Merino Wool Insulation	Wool loose-fill	2 to 4	✓	Fail	Fail	Fail
WONDER WOOL	Central Vic Insulation	Wool loose-fill	2.5	✓	Fail	Fail	Fail
AUSWOOL INSULATION	Auswool Insulation (D)	Wool-polyester blanket	2 to 3		Fail	Fail	(E)

* We asked the manufacturers to supply a test report supporting the claimed R-values of their products. Manufacturers without a tick in this column weren't willing or able to do so.

nt Not tested.

na Not applicable.

(A) This sample of a fibreglass batt is considered to be representative of all Australian fibreglass insulation products for the purpose of fire testing.

(B) This product is mainly used for acoustic purposes. Other polyester products with higher R-values for thermal insulation purposes are also available. Their fire performance is

expected to be the same.

(C) Licensed under the 'Woolmark' scheme.

(D) Manufacturer says the product has now been discontinued.

(E) Availability of other R-values unknown.

(F) As the satisfactory performance of these materials in the standard fire test is well-known, only two randomly chosen samples of cellulose loose-fill were tested to provide a comparison to wool.

(G) The first test of this product gave a 'borderline' result. When tested again, the product failed.



Polyester batt



Wool loose-fill



Fibreglass batt

What materials are available?

■ **Mineral fibres:** The technically correct name for insulating fibreglass is glasswool (made from spun fibres of molten glass). It's mainly available as batts and blankets which can be used to insulate ceilings and walls. Rockwool (made from spun fibres of molten volcanic rock) also comes in batts and blankets, as well as in loose-fill form. Rockwool is usually denser than glasswool, so — installed to the same thickness — offers better insulation and noise absorption. Both fibreglass and rockwool are resistant to fire and insect attack.

Mineral fibres are by far the most popular material for domestic ceiling insulation in Australia (around 80% of the market).

■ **Cellulose** insulation is made from pulverised recycled paper. A mixture of borax and boric acid is added to make the material fire-retardant. These chemicals also deter cockroaches and silverfish.

Most manufacturers of cellulose insulation are licensed by Standards Australia, which ensures that their products meet standard requirements and performance claims.

Cellulose is mainly used as loose-fill ceiling insulation and has a domestic market share of around 14%.

■ **Sheep's wool** insulation has the third-largest market share. It's mainly sold as loose-fill ceiling insulation, which is made from waste wool.

Currently there's no Australian standard for the manufacture of wool insulation products. Some manufacturers are licensed under the 'Woolmark' scheme and/or are members of the voluntary wool industry association AWINA, both of which aim to guarantee that wool products meet certain performance criteria (for example, compliance with the standard fire test and insect resistance).

However, all the wool products in our tests (from both licensed and unlicensed manufacturers) failed at least one of these criteria.

■ **Polyester** is a relatively new and fairly small player in the insulation market and comes in batts and blankets.

■ **Other materials** available include polyurethane and polystyrene foams, mineral loose-fill granulates (Perlite, Vermiculite), reflective foils and combinations of different materials, such as wool/polyester batts and blankets or fibreglass batts with reflective foil on one side.



Wool-polyester blanket

INSULATION

However, according to Worksafe Australia, the fibres can irritate the skin, eyes, nose and throat and cause itching, swelling, sneezing and coughing. So when you install, say, fibreglass batts yourself, make sure you follow some safety precautions:

— **Wear appropriate safety gear:** A tight-fitting, two-strap dust mask to reduce the inhalation of fibres, safety goggles or a face shield, gloves, and long sleeves and trousers to avoid fibres penetrating your skin.

— **If possible, ensure good ventilation** when working with mineral fibres. Try to minimise cutting and handling the batts. Use hand tools rather than power tools to cut them, if possible. Clean up fibre waste as soon as possible and seal waste bags properly to limit the spread of fibres.

Fibreglass can irritate your skin, nose and throat, so wear the appropriate safety gear if you plan to install batts yourself. Once installed there is no evidence of any health risk.

What's an R-value?

(And how to make sure you get the performance you're paying for.)

Insulation performance is measured as the 'thermal resistance' of a product — its 'R-value'.

The higher the R-value, the more effective is the insulation material at reducing the flow of heat. Different types of insulation with the same R-value have the same insulation performance. As well as the material it's made out of, a product's density and depth determine its R-value.

What R-value do you need?

If you want to insulate your home, the R-value you need depends on the climate where you live.

Standards Australia has recommended R-values for ceilings and walls for each region in Australia, which aim to be the best compromise between energy savings and installation costs.

The ceiling is the part of your home you're most likely to insulate (it's usually the easiest part to insulate in an existing house, and accounts for up to 40% of heat losses and gains). In most coastal areas you'll need $R=2.5$ to $R=3.0$ for your ceiling, while inland $R=3.5$ to $R=4.0$ is more appropriate. The recommended insulation levels for walls are generally lower than those for ceilings.

However, places only a relatively short distance apart may require quite different R-values (for example, the Blue Mountains in NSW vs metropolitan Sydney). Make sure you know the appropriate recommendation for your region before you have the insulation installed.

If you'd like to get a copy of Standards Australia's recommendations for ceiling insulation in your state, write to us: CHOICE, *Insulation R-values*, 57 Carrington Road, Marrickville 2204 (please enclose a stamped, self-addressed, business-size envelope).



Installing ceiling insulation

Good installation is important to get the most out of your insulation:

- Batts and blankets are usually installed between the ceiling joists — something you can quite easily do yourself if you're reasonably handy at DIY.
- Loose-fill insulation is mostly pumped or blown into the ceiling cavity — usually by the supplier. However, if you're very keen you may also be able to install it yourself.
- Install any insulation with as few gaps as possible: any gap will act as a heat bridge and lower the R-value of the insulation.
- If bulk insulation material (particularly cellulose) gets wet, it may degrade or become compacted, which decreases its insulating performance. So before installing insulation, check your roof for leaks and make sure rainwater can't be blown in from under the eaves. Also, exhaust fans from your

kitchen or bathroom shouldn't vent into the roof space because that could cause a condensation problem.

- Installation requirements regarding fire safety and health are covered by an Australian standard (AS 3999). If you install insulation yourself, make sure you follow the recommendations below. If you're having it installed by the supplier, ask them to give you a written guarantee they'll follow the standard:
 - Leave a gap of at least 25 mm around hot objects like heater flues and downlight fittings. Make sure an appropriate barrier is used if loose-fill insulation is installed.
 - Unless approved by an electrician, don't cover electrical wiring for more than 15 cm. Wires heat up when conducting electricity. Insulation may prevent this heat from escaping and cause overheating. Run the wiring on top of the ceiling joists or suspend it above the insulation instead.
- Properly installed, ceiling insulation will prevent the heat



What depth do you need?

The density and depth (usually referred to as 'thickness' by the industry) of **batt and blanket** insulation products can vary a lot. So it's very difficult to give a general guideline to the thickness you need in order to achieve a certain R-value. However, because these products don't depend on the way they're installed for their final thickness, there's less margin for error than with loose-fill products.

Loose-fill products usually fall into typical density ranges. Table 2, below, gives you an idea of the minimum thickness of loose-fill insulation you'll have to install in order to achieve a certain R-value. For example, a typical loose-fill wool insulation (density 12-15 kg/m³) needs to be installed at a thickness of around 115 mm to achieve R=2.5.

How can you make sure you get the R-value you need and you're paying for?

■ Some products could achieve a certain R-value with less thickness than that shown in the table. However, if you get a quote for such a product, we recommend that you insist on written proof of its performance — say, a test report. Make sure it clearly states how dense the product is, and what R-value it achieves at the thickness tested.

On CSIRO reports, for example, you may have to look for the following expressions: "sample density between plate" (density), "mean plate spacing (thickness)", and "mean thermal resistance" (R-value).

Ask the supplier for a written guarantee that the product to be installed in your home has the same properties as the one that's been tested and reported on.

■ Loose-fill insulation is usually only installed up to the height of the ceiling joists: if the joists are covered, it may be difficult or even dangerous to get into the roof space because you won't be able to see the joists you need to walk on.

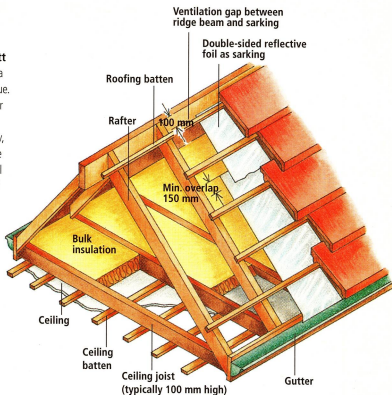
The usual joist height is 100 mm. However, your joists may be lower, or the insulation product may need to be thicker to reach the R-value you want. So if you plan to get a loose-fill material installed, measure the height of your ceiling joists, if possible, and check that the type of insulation you're thinking of can deliver the necessary R-value at that thickness.

If you go ahead with loose-fill, check that the insulation is filled to the thickness quoted. Make sure you only pay for what you get.

inside your house from escaping through the roof. In winter that's exactly what you want. In summer, however, you may need to be careful not to end up in an oven: sunshine entering through uncovered east, north and west-facing windows heats up your home and can't escape. Your home will then stay hot for a long time, even if outside temperatures drop. The solution: provide good shading for your windows to keep the sun out during the day and consider installing reflective foil sarking in the roof.

"We had fibreglass batts installed in our roof in 1993. The insulation is efficient at keeping the heat in — which is of benefit in winter when we have a warmer house than before. However, during the average Queensland summer with high temperatures and very high humidity it's of little or no benefit. The interior heats up through the windows and walls, and the heat can't escape because of the insulated ceiling."

R Darby, Kippa Ring, Qld



"I've just had cellulose fibre insulation sprayed into my roof. My warning to your subscribers is: measure the amount of material you get sprayed into your roof. The quote for my house was for 100 mm. The general thickness I found was about 80 mm, down to 70 mm in places. I contacted the company immediately and they came back and gave me a top-up. But I wasn't impressed with the 20% 'short change' they gave me initially."

F Madden, Raglan, NSW

If your joists are much less than 100 mm high, you may need to install additional insulation to achieve the R-value you need (for example, reflective foil under the roof; see the diagram, above), or to use insulation batts or blankets instead of loose-fill.

■ Loose-fill materials tend to settle with time — some more, some less. This will also decrease their insulation performance.

Talk to your installer about this problem. If they claim the product won't settle, ask for a written guarantee. If they admit a certain amount of settling, there are two options:

— Ask for the installation of more material to compensate for the expected settling. However, this may mean the material will cover the ceiling joists until it settles.

— Ask for a top-up in, say, 12 months' time.

Table 2: R-values and thickness of loose-fill products

Material	Typical density (kg/m ³)*	General minimum thickness (mm) required to achieve R-value of:				
		2	2.5	3	3.5	4
CELLULOSE	30	75	95	115	135	150
WOOL	12 to 15	90	115	140	160	180

* If you're quoted a coverage rate of the material in kg/m² for a given installation thickness, divide it by the thickness in metres to calculate the density and so be able to use this table. For example, a loose-fill wool product with a coverage rate of 1.5 kg/m² at 100 mm thickness (= 10 cm = 0.1 m) has a density of 1,5/0.1 = 15 kg/m³.

TEST REPORT

You can pay twice as much or more for different brands of foil and cling wrap, but the differences between them are nothing like as huge.



Aluminium and plastic wraps

IN BRIEF

- The more expensive brands of foil tended to be stronger and easier to handle.
- You don't necessarily need a special — and expensive — plastic wrap for the microwave or freezer. But no matter which plastic wrap you use, there are some guidelines you should follow when using it.

BEST BUYS: Farmland Foil Wrap and Multix Alfoil stood out in our tests, with Farmland being the slightly cheaper choice. Glad Wrap, Glad Microwave Wrap and Tiger Cling Wrap topped the table for plastic wraps, with Tiger being the cheapest.

SOME OF THE BIG-NAME FOILS AND cling wraps cost twice as much as 'no-name' brands, but is there really such a big difference in quality? We tested all the major brands of foils and plastic wraps we could find in the shops for performance and ease of use — and didn't find twice the difference, as the scores in the table show.

Foils

The more expensive foils tended to be stronger, sturdier and easier to handle when wrapping around food and cookware. The top scorer was FARMLAND Foil Wrap, whose serrated metal tearing edge made it very easy to tear pieces off. In our test the other foils had straight or serrated cardboard tearing edges, which weren't as sturdy and usually didn't last as long.

In the case of our other top performer — MULTIX Alfoil — the boxes we tested didn't have a metal tearing edge. However, Multix has since told us this was a fault in a particular batch and all of its foils (except 5 m in length) have one. If you buy MULTIX Alfoil with a metal tearing edge, you should find it's just as easy to use as the FARMLAND Foil Wrap.

All the foils tested tended to become brittle and more likely to tear after they'd been used in the oven,

although the stronger ones fared somewhat better than the thinner ones.

Plastic wraps

GLAD Microwave Wrap, GLAD Wrap and TIGER Cling Wrap clearly stood out from the rest in our tests. They were easy to handle, didn't crumple or cling to themselves as much as the others, and sealed well on all containers (except for a plastic microwave dish, which none of the wraps could stick to and seal).

The GLAD products have starter tabs, which make finding the beginning of the roll easy. GLAD Wrap also has a 'stick 'n' stay' tab to keep the beginning of the roll easily accessible, and a sticker to let you know when there are only a few metres left.

Perhaps not surprisingly, GLAD Microwave Wrap, which is especially designed for microwave cooking, performed slightly better than other branded products in the microwave, and a lot better than some of the cheaper 'no-name' products. The latter were also less heat-resistant, tending to become flimsy and showing signs of melting. But providing they don't come into contact with very high-temperature foods — those with a high fat or sugar content — this shouldn't pose a major problem.

GLAD Microwave Wrap is the only product which specifically promises to protect foods from freezer burn. This happens when food surfaces dry out in the relatively dry atmosphere of the freezer, causing changes to colour, texture and taste. To check

how well all the wraps protected against this happening, we wrapped the food with two layers and found they all protected against freezer burn for the period of our test (seven weeks).



Tips on use

■ **Foil:** Acidic foods — such as tomatoes, apples and citrus fruits — shouldn't be stored or cooked in aluminium foil or containers, because the acid can dissolve small amounts of aluminium into the food. It can also discolour it and give it a strange taste. Whether or not eating extra aluminium like this is bad for your health is still a matter of controversy, so for now it's probably best to be cautious and avoid using aluminium products in contact with acidic foods.

■ **Plastic wrap:** When cooking in a microwave with plastic wrap, don't let it come into contact with fatty or high-sugar foods in particular, don't use it with a browning unit or dish, and leave an unsealed gap to allow steam to escape (don't pierce the plastic).

Since most domestic wraps are made from polyethylene, which doesn't contain plasticisers, earlier concerns about these migrating into foods are less valid. Among those tested, **GLAD Microwave Wrap** is an exception, as it's made from PVDC, which does contain a plasticiser (dihexylazelaate). Currently there's no evidence this plasticiser can harm your health, but CHOICE is keeping a watching brief on the issue.



Green considerations

■ Try to limit your use of aluminium foil as much as possible. The production of aluminium consumes an enormous amount of energy, contributing to the greenhouse effect, and its production is non-sustainable. The aluminium foils we looked at were all imported, so the energy consumed in transport also contributes to their environmental impact.

■ Plastics are relatively energy-efficient to make and consume little in the way of resources. But they're made from oil, which is a non-renewable resource.

Aluminium foils and plastic wraps

Brand name (in rank order)	Where available	Target price (\$)*	Overall score (%)	
Aluminium Foil				
FARMLAND Foil Wrap	Coles	1.90	83	
MULTIX Alfoil (A)	Most stores	2.00	78 (A)	
TIGER Foil	Franklins, Woolworths**, Bi-Lo**, Independents	2.80*	73	
OSO Aluminium Foil	Coles, Franklins, Woolworths, independents	1.70	71	
BI-LO Aluminium Foil	Bi-Lo	1.10	70	
BLACK & GOLD Aluminium Foil	Most independents	1.30	70	equal
SAVINGS Aluminium Foil	Coles	1.40	70	
HOMEBRAND Aluminium Foil	Woolworths	1.20	68	
NO FRILLS Aluminium Foil	Franklins	1.20	68	equal
NO NAME Aluminium Foil	Jewel	1.20	68	
Plastic Wrap				
GLAD Wrap	Franklins, Coles, Woolworths, independents	1.75	82	
GLAD Microwave Wrap	Coles, Woolworths, most independents	4.77	82	equal
TIGER Cling Wrap	Woolworths, Franklins, Jewel, independents	1.25	78	
NO NAME Cling Wrap	Jewel	2.00*	70	
BLACK & GOLD Food Wrap	Most independents	1.20	68	
OSO WRAP Cling Wrap	Coles, Franklins, Woolworths, independents	1.20	68	equal
SAVINGS Cling Wrap	Coles	1.05	67	
FARMLAND Clear Wrap	Coles	1.60	65	
BI-LO Cling Wrap	Bi-Lo	1.05	62	
HOMEBRAND Cling Wrap	Woolworths	0.95	62	equal
NO FRILLS Cling Wrap	Franklins	1.05	62	

* Prices shown are the most common price we found (rounded to the nearest five cents), based on price checks in May 1997. The prices are for the length tested, which was 10 m (x 30 cm wide) where available (Tiger was 20 cm long). The cling wrap was 30 cm wide and 30 m long, except for No Name, which was 60 m long.

** NSW only.

(A) The Multix Alfoil we tested didn't have a serrated metal tearing edge. According to Multix, all its foils (except 5 m in length) now have one. If you purchase a Multix foil with one, it should perform at least as well as the Farmland foil did in our test.

1 Overall score

The overall score is based on our panel's assessment of the foils and wraps in use.

■ The panel assessed each **foil** for strength, how well it moulds around foods and cookware, and how easy it is to remove after oven baking. They also considered how easy it is to tear the foil off the roll. The time the box lasted before becoming dented, flimsy and worn was also assessed.

Laboratory tests of strength were also carried out, including the tension required to pull a piece to breaking point and the pressure required to puncture it with a small steel ball. The results of these tests were consistent with the findings of the user panel.

■ **Plastic wraps** (also called cling wrap or cling film) were assessed by the panel for ease of handling when wrapping various foods and containers, and how well they sealed on different surfaces. The wraps were also tested to see how well they protected foods from freezer burn, and how they fared in the microwave. The dispenser box was assessed in the same way as for foils.

Adding fluoride to our drinking water is controversial — we take a look at the latest arguments on both sides of a debate that started more than 30 years ago.

Fluoridation — friend or foe?



IN BRIEF

- Fluoride in water (fluoridation) is effective at reducing tooth decay, but fluoride's now available from more sources than in the 1960s and 1970s when it was first introduced into water in Australia. Nowadays, fluoride in toothpaste, fluoride treatments applied by dentists, fluoride mouthwashes and better dental hygiene and care all contribute to reducing decay as well.
- Fluoridation is an effective, low-cost way of getting fluoride to those who may benefit from it most, particularly more socially disadvantaged groups.
- Fluoride in water contributes to mottled tooth enamel (fluorosis) in people who get too much fluoride in total. Mottled teeth are not a health risk, but can be embarrassing.
- While there are still unanswered questions about possible health risks associated with water fluoridation, governments need to fund studies and monitor the issue.

ALMOST TWO-THIRDS OF AUSTRALIANS now drink fluoridated water — of the capital cities, Canberra, Hobart, Sydney and Perth were all fluoridated in the Sixties, and Melbourne and Adelaide in the Seventies. Brisbane is the only capital city that remains unfluoridated (only 5% of the whole of Queensland drink fluoridated water). The decision to add fluoride to our water to reduce dental decay was controversial, and it remains so today. And so a debate which started more than 30 years ago continues.

Deciding whether or not water fluoridation is a good thing depends on a weighing-up of the full range of benefits and drawbacks.

The case for

"Fluoridation of drinking water remains the most effective and socially equitable means of achieving community-wide exposure to the caries prevention effect of fluoride ... there is no evidence of adverse health effects attributable to fluoride in communities exposed to a combination of fluoridated water and contemporary discretionary sources of fluoride."

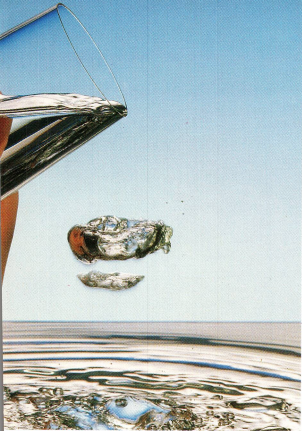
National Health & Medical Research Council,
The effectiveness of water fluoridation.

Fluoridation of water decreases dental decay in the Australian population

In Australia there have been at least seven major epidemiological (population) studies published since 1985, and all of them concluded that fluoridated drinking water works at reducing the average level of tooth decay in children.

But how many fewer decayed teeth is *your* child likely to have as a result of fluoridated water?

The NHMRC's latest review (1991) of the effectiveness of water fluoridation concluded that water fluoridation was still effective in Australia today — although on average its contribution to a reduction in tooth decay is smaller now than in the 1960s, when the typical reduction in decay due to water fluoridation was 50-60%. An accumulation of studies reviewed by the NHMRC suggests that nowadays, on average, it's more like 20-40%. Other things that contribute now are fluoridated tooth-



paste, fluoride treatments applied by dentists and fluoride mouthwashes.

Very few studies have looked at whether fluoride in water reduces dental decay in adults, but the few that have been done indicate that fluoride's protective effect continues throughout adult life.

The results of a recent study in Brisbane suggest that adding fluoride to its water would mean the average 10-year-old could have their number of decayed milk ('baby') teeth surfaces reduced from four to two. For 12-year-olds, one in four could have one affected permanent tooth surface instead of two. This study's findings are consistent with earlier ones in NSW and WA.

Of course, averages can be quite deceptive, because today lots of children don't have any decay, which means there are plenty of children out there with much higher than the 'average' number of decayed teeth, and they are the ones that stand to benefit most from fluoride in water. They tend to be children from lower-income families and those who don't brush regularly (or who started late).

The above study suggests that about 64% of 12-year-olds in a fluoridated area (Townsville) and about 46% in a non-fluoridated area (Brisbane) have no decay. This appears representative of fluoridated versus non-fluoridated areas generally.

The 46% in non-fluoridated areas who don't have decay are likely to be getting sufficient protection from regular brushing with a fluoride toothpaste, as well as a protective effect through foods they eat being grown or processed in fluoridated water (known as the 'halo' effect).

When you look at the benefits to a population rather than to the individual, the impact could be substantial — for example, if all the children in Brisbane were to start drinking fluoridated water, the study mentioned earlier suggests there would be approximately 300,000 fewer tooth surfaces with decay. This would represent substantial cost savings (to parents and government health budgets) in addition to other benefits for the children, such as fewer fillings and less trauma.

Fluoridation of water is a socially equitable means of decreasing tooth decay

It's well established that the lowest socio-economic groups have the highest rates of tooth decay and poorer access to, and use of, dental services. Studies have shown that the difference in the amount of dental decay between high and low socio-economic groups is smaller when children drink fluoridated water.

It's been suggested by one group opposed to the fluoridation of water that the promotion of toothbrushing with fluoride toothpaste could be one strategy to replace water fluoridation. However, the NHMRC concluded that such a program would be less effective, more costly, and less likely to reach all socio-economic groups than fluoridation of water supplies.

Fluoridation of water is a cost-effective means of reducing decay

In 1989 a group in the US looked at the cost-effectiveness of various ways of making sure children get enough fluoride. They concluded that water fluoridation was one of the best bargains in public health. This is supported by the few economic analyses carried out here in Australia.

Dental fluorosis (mottled teeth) occurs when the body gets too much fluoride as the teeth are forming below the gums. The teeth take up too much fluoride and the enamel becomes mottled. The effect can vary from small opaque or white flecks or lines to more severe pitting, brittleness and brown staining. (The photo shows 'moderate' fluorosis; it looks more extreme than in real life because the teeth have been dried for the photography, whereas they're normally wet.)



Photo courtesy of Dr P J Nordan, Dental Services, Health Department of Western Australia.

Filtering out fluoride

If you don't want fluoride in your water you can use a water filter. However, not all are effective. Carbon filters aren't generally suitable for removing fluoride, but distiller, ion exchange and reverse osmosis filters should all be able to do the job. Here's the lowdown on those that can remove fluoride:

- Distillers: Effective, but bulky, slow and expensive to run.
- Ion exchange: Don't work well in areas where 'total dissolved solids' are high (water from Adelaide, Perth and rural areas may fall into this category) and are moderately expensive.
- Reverse osmosis: Very effective but quite slow and waste a lot of water. They're generally expensive and replacing the membrane every two years is also not cheap.

As an example of the costs involved, the Danes, who do not fluoridate, have an expensive school dental-care system that just about manages to achieve the same outcome as we have in fluoridated areas in Australia, but with many more staff at several times the cost.

The case against

"We are all affected by this potentially very dangerous fraud: the convincing of governments and people generally that it is ethical, safe and beneficial to medicate, compulsorily, many millions of people throughout their lives with small but uncontrollable doses of a cumulative and very toxic substance because of the notion that it reduces the prevalence of dental decay. All this, although neither its safety nor any scientifically proved reduction in the number of decayed teeth has been demonstrated."

Dr Philip R N Sutton,
The greatest fraud — fluoridation.

Fluoride in water, together with other fluoride sources, is responsible for dental fluorosis

A common opinion among supporters of fluoridation is that mottled teeth, caused by a build-up of fluoride (dental fluorosis), are only of mild cosmetic significance, and that this effect is more than ad-

ALLERGIC REACTIONS

The claim that people may be allergic or hypersensitive to fluoride has been repeatedly raised over the last 40 years. People have claimed they've had reactions including skin rash, inflammation of the mouth, mouth ulcers, gastrointestinal irritation, joint pain, migraines, convulsions and mental deterioration.

When the NHMRC reviewed the issue in 1991, it concluded that the evidence that fluoride is an allergen remains unconvincing, and the claims unsubstantiated.

However, until properly controlled studies are carried out in Australia, fluoride in water (or toothpaste) can't be ruled out as a cause of sensitivity in some people.

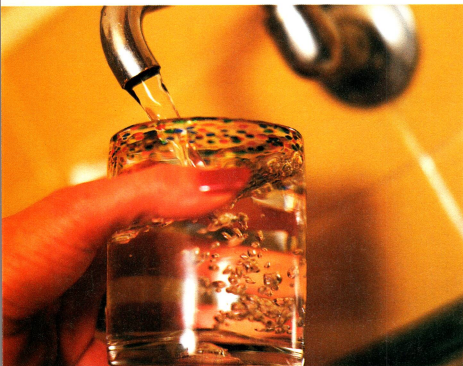
equately compensated for by the reduced level of decay in the community.

However, this obviously doesn't take into account the views of children with mottled teeth and their parents. Recent studies have found that mild to moderate forms of fluorosis can cause embarrassment and self-consciousness, rating fluorosis as bad as teeth being crowded or having overbite problems.

It was originally accepted when fluoride was first added to water that 10% of children would get the mildest form of mottled enamel. However, recent Australian studies suggest that far more children are affected: 40% of 12-year-old children in Perth (fluoridated) and 33% of children in Bunbury (non-fluoridated) had signs of fluorosis; 57% of 10 to 17-year-olds exposed to fluoridated water in SA had signs of fluorosis, as opposed to 29% of those not exposed to it.

One of the options for reducing dental fluorosis is stopping water fluoridation, but it's not the one favoured by health authorities — they consider other discretionary sources of fluoride (such as swallowing fluoride toothpaste) play a greater role in fluorosis, and that we should be thinking of ways to reduce this kind of intake rather than not putting fluoride in water and losing the benefits of reduced dental decay in otherwise hard-to-reach groups.

For example, it's been estimated that over half the fluoride intake of a two-year-old comes from toothpaste (it's thought that kids swallow about one third of the toothpaste on their brush) — the rest comes from water (28%) and food (19%). So reducing the fluoride content of toothpaste and discouraging young children from swallowing it offer potentially greater benefits on this score than removing fluoride from water. See *Kids and toothpaste*, above right, for more on this.



One argument against fluoridation is that you can't control how much water people drink — while an 'overdose' may be unlikely, some people will be taking in far more fluoride than others.



Kids and toothpaste

Since swallowing toothpaste accounts for more than half a youngster's intake of fluoride, it's wise to try to limit the amount your kids swallow. Here are some tips:

- Young children should use a low-fluoride toothpaste up to the age of five or six, or until you're confident that they spit it all out. Major low-fluoride brands on the Australian market include **COLGATE Junior** and **MACLEAN'S Milk Teeth**. However, don't think all toothpastes marketed to kids are low in fluoride. Some are aimed at older kids (for example, **COLGATE Sparkle**) and have the same amount of fluoride as regular toothpaste.
- Use only a pea-sized amount of low-fluoride toothpaste or just a smear of regular-fluoride toothpaste and supervise your children when they brush.
- Make sure your child spits out all the toothpaste after brushing, before they rinse. Rinsing may encourage swallowing of residual toothpaste rather than effective spitting and it reduces the amount of fluoride left to work at the tooth surface.
- Avoid toothpastes that are brightly coloured, sparkly or contain attractive flavouring agents for children under six — they may mean kids are more likely to swallow them. For kids over the age of six who don't swallow their toothpaste, they may be a good incentive to get them to brush their teeth.

Using infant formula in fluoridated areas at an early age and for a long time have also been reported to be risk factors for fluorosis in several studies. Even if there's no fluoride in the formula itself, making it up with fluoridated water works out at roughly 1.0 to 1.5 mg of fluoride per day for a six-month-old infant — that's over 100 times higher than breast milk. Studies in the US found that fluorosis was lowest for children who had been breastfed for three months or more, and greatest for those bottle-fed for more than a year.

Inappropriate use of fluoride supplements (drops and tablets) has also been associated with fluorosis. It's easy to get too much fluoride this way if you don't stick to dosage instructions.

The bottom line in this argument? Removing fluoride from water might mean that a child doesn't get mottled teeth, but instead has more tooth decay over their lifetime — but fluorosis still wouldn't be entirely eradicated.

We can't be certain that exposure to fluoride in water from birth till old age is without health risks

Over the years, questions have been raised about a link between fluoride and numerous conditions, the more serious of which relate to bone damage. These include bone cancer, skeletal fluorosis (fluoride build-up in the bones) and hip fracture.

The NHMRC has reviewed available evidence for bone cancer and skeletal fluorosis and concluded that in Australia there is no evidence that fluoride

from water or other sources has caused these conditions. An independent review (endorsed by the World Health Organisation) has reached similar conclusions about the relationship between fluoride and hip fracture.

Several recent studies did claim to show a higher rate of hip fracture in the elderly in fluoridated than in unfluoridated regions. However, an independent review (endorsed by the World Health Organisation) concluded that these studies failed to establish an adequate basis for their conclusions. CHOICE thinks further research into this area is necessary to clarify the issue. In particular, we would like to see studies conducted in Australia.

However, the increase in fluoride intake in Australia has almost certainly led to an increase in the amount of fluoride in the bones of some Australians. Although no cases of skeletal fluorosis have been reported in Australia, no studies about it have been conducted here, so we don't know for sure what the picture is like. So it's possible that some

Fluoride in bottled water

You're not guaranteed less fluoride in bottled than in tap water, but last time CHOICE tested bottled water we did find that most of them contained no fluoride.

However, fluoride doesn't have to be listed on the nutrient panel, so you've often no way of knowing what the level is — it will depend on the amount of fluoride in the water to begin with and the filtration process used (if any).

If you want to avoid fluoride, your best bet is to try to find a bottled water that specifically says on the label it's free of or low in fluoride.

What's the chance of getting too much fluoride in your water?

There are a number of safety measures in place at fluoridation plants to prevent overdosing (although underdosing occasionally happens). These include online analysis of fluoride levels, daily checks on the volume of fluoride used, as well as high-level alarms and automatic cutouts. The target fluoridation level in Australia is 0.7 to 1 ppm (parts per million), depending on the climate — less is added in hotter climates to account for greater consumption of water.

Fluoride works on teeth in the following ways:

- It inhibits the action of plaque bacteria.
- It hinders the growth of plaque bacteria on the surface of teeth.
- It helps to 'rebuild' damaged enamel.

Where else is fluoride?

- There's lots of fluoride around us — it's in the sea, soil and air. It's the thirteenth most abundant element in the earth's crust. It gets into the air from burning fossil fuels as well as being a waste product of industry — for example, aluminium smelting.
- Most foods contain traces of fluoride and some, such as tea, fish and root vegetables, can contain quite a lot. A cup of tea contains about 4 mg of fluoride — that's around 16 times as much as a cup of fluoridated water.
- The amount of fluoride that occurs naturally in water depends on the type of soil it drains through — in Australia (and elsewhere) it typically ranges from 0.1 to 0.4 ppm, but some communities have naturally higher concentrations, even up to several parts per million.

people with a very high water intake or who have impaired kidney function may be affected.

Claims that fluoride causes bone cancer are based on uncertain findings from studies in rats which received extremely high amounts of fluoride, as well as a couple of human studies. NHMRC reviews have concluded that the weight of evidence isn't sufficient to establish a link.

However, all this is not to say that fluoride is in the clear. Fluoride does tend to accumulate in the bones, and for this reason alone we should continue to monitor the amount we consume, the amount accumulating in our bones and its possible adverse health effects.

Fluoridation amounts to compulsory mass-medication of the majority of Australians

Some people think the benefits of fluoridation outweigh the fact that they don't have a choice in the matter. Others think they don't get much personal benefit from fluoridation and so are more likely not to want the decision made for them. Still others may think no amount of benefit makes up for what they perceive as an infringement of their civil rights.

Another criticism of water fluoridation is that, although the amount of fluoride added to water is strictly measured, people drink different amounts of water (for example, people doing heavy physical labour can drink a lot), so the dose of fluoride is effectively uncontrolled.

Interestingly, the Swedes, Dutch, Germans and Finns all stopped successful fluoridation projects, not because the effectiveness of fluoridation was in doubt, but because their citizens didn't like the concept of providing medication through drinking water.

Some anti-fluoridationists claim that the benefits of fluoridation are negligible or close to it

Leading anti-fluoridationists in Australia and New Zealand have conducted studies which found no difference in decay levels of permanent teeth between the fluoridated and unfluoridated cities they compared.

The NHMRC looked at the Australian study in question as part of its last review, and concluded that the analysis of the data was inadequate.

As far as the New Zealand study goes, the New Zealand

CHOICE'S VIEW

At present CHOICE supports the fluoridation of drinking water as the most effective, cost-effective and socially equitable means of achieving community-wide exposure to the effects of fluoride in preventing tooth decay.

However, compared to the Sixties and Seventies when fluoridation was introduced in Australia, the contribution made by fluoride to reduced tooth decay appears to be getting smaller because of the availability of other fluoride sources, such as toothpaste. And questions are still being raised about possible health risks.

Fluoridation is not a closed book. The ratio of risk to benefit is constantly changing and the government needs to review the situation regularly.

Department of Health presented the same data as the anti-fluoridationists used, but in a different way, and found a small benefit from fluoridation — although this analysis in turn has come under criticism from anti-fluoridationists.

This reflects the difficulty of deciding how much weight to put on the findings of any one study, and the problems of achieving independent analysis of data.

Fluoride doesn't need to be swallowed to protect teeth, so why add it to water?

We used to think fluoride mainly protected teeth from within the body. Now it's widely recognised that it works mainly on the surface of the teeth and that there's next to no benefit in swallowing it. And although drinking water is an easy way to distribute fluoride to people, it might not really be the most appropriate for the job.

Anti-fluoridationists argue that consumers are being misled into believing they have to have fluoride in drinking water and that they must swallow it.

Fluoridation narrows the gap between rich and poor, but it's not the only answer

In fluoridated areas low-income groups still have the highest rate of tooth decay. Anti-fluoridationists are concerned that these people are being sold what they consider to be a largely ineffective measure (fluoridation) which distracts attention away from the need to improve children's diets (including through the reform of school tuckshops) and to improve social and financial support for low income earners. □



CHOICE BOOKS caring for the home

A CHOICE BOOK

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\$17 Code: HCPA



Hot concerns

My wife and I bought an oil-filled column heater for her elderly parents, who are in hostel care. We decided to bring it home and run it for a while to get rid of the 'burning paint' smell, and discovered that on its maximum setting, it became too hot to touch (just as your May 1997 article on column heaters suggested).

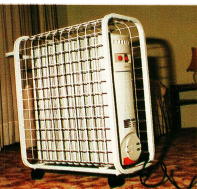
This concerned us because the elderly people at the hostel are a bit shaky on their legs and move with the aid of frames. If someone was to fall on the heater, they might not be able to get off quickly enough.

So, a safety cage seemed to be the way to go. The idea, and a rough drawing of what I had in mind, was given to a welder friend of ours who produced a strong, safe cage around the heater.

The cage is strong enough to take the weight of an adult, while still allowing access to the controls. There are strong wheels attached to the base of the frame, and a handle for mobility. The cage has a powder-coated finish to match the heater, and never gets too hot to touch.

I enclose a photo of it for the information of any CHOICE readers who may be facing a similar dilemma.

F Fisher, Boya, WA



Making a column heater safer for older people.

What a good idea — perhaps it should be patented! Apart from the elderly, such a cage may also be useful for families with small children. Inquisitive fingers could still find a way through the cage, but accidental burns might be prevented.

If you're buying a new column heater and are concerned about potential burns, the VULCAN 737SLG reached the lowest surface temperatures in our tests, and was also the best heater overall (see Safe but slow in CHOICE, May 1997).

Forbidden fruit

I have just read with interest your article about mobile phones (March 1997), and found it quite useful. However, there is one aspect of the digital network that I find extremely annoying: unlike the analogue network, where there is one common underlying network, the three digital networks are completely separate.

So you can often find yourself in the situation where there is a strong signal available, but because that belongs to another carrier, you can't use it. In this situation my phone displays "Emergency calls only" and it can perform a search of the available networks, but simply displays "Forbidden" next to the ones that I don't subscribe to.

As the coverage in cities and large towns is quite good, it's really only in the country areas that the complete absurdity of the situation becomes apparent.

The options for overcoming this problem seem to be as follows:

LETTER OF THE MONTH

PUT IT IN WRITING
Letters That Get Results
MARGARET WHITE

We want to hear from you — your experiences help us greatly in our research. We'd also like to hear your experiences using CHOICE to buy a product or service: did it save you money, time or disappointment?

To say thanks for writing to us, each *Your Letters* will award a prize of a CHOICE book to the 'Letter of the month'. This month's winner, F Fisher of Boya in Western Australia, receives *Put it in writing* for their letter.

Unfortunately we don't have the resources to answer all your letters personally. We also reserve the right to cut parts of longer letters for publication. See page 2 for how to reach us by mail, fax or email.

■ Each carrier erects a similar — and costly — station in each area. The cost must then be passed on to consumers.

■ Users subscribe to all three networks to ensure total coverage — expensive at \$20 to \$35 each per month.

■ The obvious solution, and the best for consumers — that digital networks are shared by the service providers, just as the analogue network is now.

However, I have been told by the telephone companies that it's not possible to share the network — is this a technical limitation or business decision?

C Miller, Crows Nest, NSW

The analogue system can be accessed by both Telstra and Optus — although Telstra owns the network, Optus buys bulk air time from Telstra and resells it to its subscribers.

As for the digital networks, reselling air time is technically possible, but the system hasn't been set up for it. It's also technically possible for you to use your phone on another network's signal — just as you can in an emergency. But present software limitations mean that you can't be billed for it. This is the main reason you can't use other networks.

While this may not suit some people, particularly those whose travels take them into network areas exclusively covered by different carriers, there are other alternatives.

For example, the analogue network, which is being phased out in 2000, may remain after that in some areas, if there is no digital or alternative technology providing a mobile phone service. Satellite-based services are also on their way, as are other terrestrial technologies. Over time, you could hope to see the service and technologies improve as service providers compete for your business.

Country users would then need to look carefully at their particular needs and find out which service would provide the best coverage and price benefits.

The Consumers' Association will ask the Australian Competition and Consumer Commission (ACCC) to consider requiring that mobile carriers offer their services for 'roaming' — that is, allow mobile users access to the technology of all networks. However, the cost of providing this service could be passed on to consumers.



What price health insurance?

The Government has introduced both a carrot and a stick to encourage people to take out private health insurance. Where do you stand financially, and what are the new options that are supposed to make it look like a better deal?



IN BRIEF

■ Instead of ensuring the public health system can fulfil the needs of all Australians, the Government wants people to buy private health insurance and use private hospitals — in other words, to create a costly health system with all the bells and whistles for people who can afford it, and a neglected, second-rate public system for those who can't.

■ Private health insurance premiums have risen by more than 100% in the past eight years, compared with a cost-of-living increase of less than 30%.

AS THE GOVERNMENT SEES IT, THE financial plight of the public hospital system is due to people making use of it. We're an aging population, medical breakthroughs mean there are more treatment options, and the latest figure for those with hospital insurance is 32.5%, down from 33.9% a year before, and over 40% five years ago — it's not surprising there are more demands on the public system.

In an attempt to shift some of the costs to the private system (and so onto individual consumers) the Government has introduced 'incentives' for people on lower incomes who do have health insurance and a penalty for those on higher incomes without private hospital cover.

Some people have always paid for health care out of their own pocket, whether by paying for insurance or directly for private medical services. Although we may perceive ourselves as having a public

health system, in 1990 it covered just 68% of health expenditure. And we are relatively big spenders on private health care; Australia is ranked sixth out of the 24 OECD countries in terms of private contributions to health care.

The carrot

From July 1 this year, there's been an incentive scheme for people with private health cover that costs more than a specified minimum price and an income below certain limits (see Table 1). This will pay up to \$450 toward health insurance premiums, although any costs you have to pay out of your own pocket when you make a claim are still not taken into account.

The Government estimates almost 80% of families are eligible for these incentives. If you're eligible, you can have the money paid directly to your health fund or claim it as a rebate with your tax return in

Table 1. Health insurance incentives

Eligibility (figures shown are taxable income)	Hospital cover incentive	Ancillary cover incentive
Singles (earning up to \$35,000)	\$100 (if policy costs at least \$250 pa)	\$25 (if policy costs at least \$125 pa)
Couples (earning up to \$70,000)	\$200 (if policy costs at least \$500 pa)	\$50 (if policy costs at least \$250 pa)
Families (earning up to \$70,000 + \$3000 for each child after the first) (A)	\$350 (if policy costs at least \$500 pa)	\$100 (if policy costs at least \$100 pa)

(A) For example, with three children the family income threshold would be \$76,000. If you are a sole parent, the family income test rather than the single income test applies as long as both you and your children are covered by private health insurance.

the 1997-98 tax year. To have it paid to the health fund you complete a form (available from the fund). If your situation changes during the year (your income increases, say), you're required to let them know.

If you claim the incentive when you shouldn't you'll have to pay it back, although you'll have three months to do so before incurring a penalty. Contact the Department of Health and Family Services' information line on 1800 676 296 or the Australian Taxation Office helpline on 13 28 62 for more information.

If you choose to claim the incentive with your tax return, you can lose out if you don't pay enough tax to cover the rebate. This is because rebates can only reduce the amount of tax due — it can't reduce your tax bill to below zero.

The stick

If your income is higher, the Government has also introduced a penalty for not taking out hospital insurance for yourself, your partner and any dependent children (those under 16 whose upkeep you contribute to, or under 25 if they're students).

From July 1 this year, people who don't have at least private health insurance to cover doctors' fees and accommodation in hospital have an additional Medicare levy surcharge of 1% applied if their incomes are over certain levels. For single people, the taxable income has to be over \$50,000; for couples, over \$100,000. For families these limits are raised by \$1500 for each dependent child after the first (so, for example, the income limit for a family with three children is \$103,000).

This surcharge could be a considerable penalty when it's time to pay it on June 30, 1998. For example, a couple with a combined taxable income of \$120,000 will have to pay a surcharge of \$1200 if they don't have hospital insurance. It's likely to be cheaper to buy insurance with a high excess (which means the premium costs less), even if you never intend to use it (see *Should you have health insurance?* on page 24).



The increasing cost of insurance

Almost as soon as the incentive was announced it seemed there was a round of price increases by health funds. We looked at what was being charged when we published articles on health insurance in the past, and compared premiums with what's on offer now.

The rules governing funds have changed, so, for example, you may have to pay fewer extra costs (known as 'out-of-pocket' costs) when you make a claim now than you did. But it's not surprising that people balk at the price rises — in the eight years we looked at, the consumer price index had risen by almost 30%, while health cover had gone up more than 100% in the same period.

Table 2. Insurance costs

Hospital cover	Apr '89	Nov '92	Jul '96	Jul '97
ACT/NSW	\$800	\$1280	\$1477	\$1728
NT	\$554	\$878	\$1009	\$1111
Queensland	\$964	\$1289	\$1485	\$1704
SA	\$707	\$1447	\$1817	\$1893
Tasmania	\$698	\$1310	\$1571	\$1807
Victoria	\$942	\$1717	\$1842	\$2184
WA	\$754	\$1058	\$1216	\$1426
Average cost	\$774	\$1283	\$1488	\$1693
Cost index (April 1989 = 100)	100	166	192	219
Ancillary cover	Apr '89	Nov '92	Jul '96	Jul '97
ACT/NSW	\$420	\$623	\$815	\$894
NT	\$314	\$439	\$637	\$701
Queensland	\$377	\$538	\$674	\$762
SA	\$360	\$548	\$814	\$840
Tasmania	\$289	\$368	\$461	\$561
Victoria	\$348	\$559	\$763	\$861
WA	\$354	\$497	\$665	\$784
Average cost	\$352	\$510	\$690	\$772
Cost index (April 1989 = 100)	100	145	196	219
Consumer price index (rebased so April 1989 = 100)	100	116	129	130

We looked at the larger funds in each state and territory. The figures shown are average annual costs for a family and show the yearly cost of 'top' or 100% private hospital and ancillary cover (with the smallest available excess or co-payment).

Our 'cost index' of 100 for April 1989 means we can calculate the percentage by which insurance premiums increased each time we assessed them. This makes it clear that costs for hospital cover, for example, have gone up by 119% on average — more than double — in the past eight years. We called the CPI figures for April 1989 100 as well, to enable us to make the same comparison, which shows that, in the same time period, the cost of living has increased by just 30%.

TYPES OF INSURANCE

Health funds offer two types of insurance:

- **Hospital cover** contributes to the costs of in-hospital treatment and accommodation as a private patient in a public or private hospital.
- **Ancillary (extras) cover** contributes to the costs of a range of out-of-hospital medical services not covered by Medicare. Schemes are likely to include dental treatment, spectacles or contact lenses and physiotherapy, and may cover acupuncture, other alternative therapies, gym membership or even sports equipment, for example.

You can take out one or both of these types of insurance, but both are almost certain to leave you with out-of-pocket costs if you make use of the services.

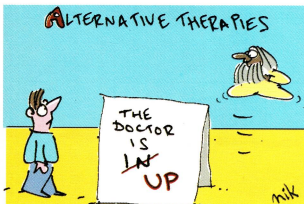


Should you have health insurance?

For those hit by the Medicare levy surcharge, the choice can be a simple financial one — pay the surcharge and continue to use the public hospital system funded by your taxes, or buy (perhaps cheaper) insurance. **MBF**, for example, offers policies with cheaper premiums and a range of excesses (up to \$2000 for family cover); annual family premiums with these highest excesses range from \$670 in NSW to just \$391 in NT, both of which could be cheaper than paying the levy. If you ever make a claim, though, you'll almost certainly have to pay more costs out of your own pocket — whereas you'd pay nothing in the public system.

The wider question about whether you need to have health insurance is more a question about your own preferences and beliefs. There's no evidence that you get better care or treatment in the private hospital system than in the public. When we've looked at the question in the past we've concluded that health insurance could offer you more choice of hospital and hospital doctor than Medicare, and potentially faster treatment for so-called 'elective' surgery (treatment for non life-threatening conditions). But for most people those aren't essentials.

For the young and healthy on lower incomes it still looks like expensive peace of mind, even with the incentive applied. For people likely to make use of it (particularly those who are older or chronically sick), it's likely to have some advantages to offer.



JULIE GETS THE INCENTIVE

Julie has paid for private health insurance for years. With **MEDIBANK PRIVATE** she just had hospital cover (which, thankfully, she never needed to use). But last year she switched to the **HCF Fit and Well** scheme, which offered both hospital cover (though excluding a range of treatments) and ancillary cover.

The current cost for Julie's health insurance is \$56.10 a month (\$673.20 a year), which she rates as good value — she's claimed for glasses, joggers and gym membership, and is preparing herself for a visit to the dentist.

Julie tells us that, of course, cost is a big issue with her, and she'd have to pull out if it went up a lot. But for now she's committed to having the cover. On July 1, Julie's premium fell because she qualified for an incentive of \$125 a year (her taxable earnings are under \$35,000). This was welcome, but it hasn't been the deciding factor for her keeping it on.

Whether offering incentives will help relieve the stresses on the public health system remains to be seen, but giving payments to people to encourage them to do something they already do seems an inefficient way to go about it.



And the future?

The 'community rating' system which applies — at least in theory — in Australia means people pay the same for health insurance regardless of their age, sex or state of health, and in the past it has been a fundamental principle of health insurance. To stay in business under such a system, health funds have to attract people who don't make claims — not just those who do.

The alternative is to 'risk-rate', but this would be likely to mean much higher premiums for older people and women. In the UK, for example, a person aged 70 may well pay more than four times the premium of someone aged 30. Already many Australian funds offer cheaper schemes that exclude some expensive treatments (such as joint replacements or pregnancy-related conditions), which is effectively the thin end of the wedge for community rating. **CHOICE** would regard an erosion of community rating as a reduction in social equity, with elderly and sick people, who are more likely to need excluded procedures, paying more for their cover.

We don't recommend these 'exclusionary' policies from an individual's viewpoint either — women can fall pregnant without planning to and even a young person can need a knee replacement. To keep your premium costs down, you're better off opting to pay an excess should you ever need to claim.

The 'incentive' might encourage more people to take out insurance. However, as you can see from Table 2 on page 23, the incentive has already been eroded by price rises in the last year.

The surcharge may well tip some better-off people into health insurance, although they may continue to use the public system rather than claim on their insurance because its excesses and out-of-pocket expenses may still cost them extra money. This may lead to the health funds being subsidised without relieving the burden on Medicare.

Insurers are likely to be allowed to do more radical things in the future. These include measures to stop people joining only when they need treatment (most have a maximum one-year

waiting period before giving cover for pre-existing conditions), and extending the agreements between funds and hospitals and funds and doctors (see right).

Of course there are dangers associated with change. In particular there are considerable concerns about health funds interfering in the relationship between doctors and patients, and the Australian system moving toward one offering 'managed care', as in the US — where it can be the fund which decides on treatment, rather than a doctor.

We'll be watching the changes closely as well as looking at how the health care system is operating, and reporting on them in **CHOICE** and *Consuming Interest* (our policy and campaigning magazine).

Health insurance: what's changed?

■ Instead of 'family' and 'single', which were formerly the only membership options, health funds can now also offer different premiums for single parents and for couples without children. And they're no longer required to charge a family no more than double the premium paid by a single person.

CHOICE SAYS: Although these changes were designed to make membership more attractive to people who don't fit the 'family' cover, there appears to have been little effect on prices so far. Singles are still paying half the family premium, and single parents or childless couples pay little or nothing less than families. If pricing differentials do emerge, you should check you have appropriate membership.

■ **Most hospital insurance schemes** now offer their maximum cover in selected ('agreement') private hospitals, and a considerably lower level of cover in non-agreement hospitals. Health funds must have lists of participating hospitals available for the public.

What cover is given outside these agreement hospitals? Generally it's so low that your choice of hospital is effectively limited to those with agreements, or being a private patient in a public hospital.

You should also look at what happens if you need out-of-state treatment — most funds' agreements (even if the schemes are available nationally) cover just hospitals in your home state.

CHOICE SAYS: Health funds may have agreements with only a few of the available hospitals in your state, particularly in specialist areas such as psychiatry. If you have strong views about which hospital you'd like to go to you'll want to make sure before you join a fund that an 'agreement' is in place.

We'd like to see the health funds provide a list showing all private hospitals in a state, together with information about which ones have agreements with the fund, as well as the areas of medicine dealt with. We would also like to see information provided about when the agreements expire.

■ **When, and how much,** will you have to contribute to the costs? Look at excesses (a fixed amount you have to pay if you claim) and co-payments (any contribution you have to make on an ongoing basis to the expenses covered).

But also bear in mind that there's a range of other out-of-pocket costs, the largest of which is likely to be any amount the hospital doctor charges above the Medicare Schedule fee. Even the most comprehensive fund won't cover costs above this amount unless they have a contract with the doctor (on average this means a patient paying about a fifth of a surgeon's fee themselves, and over a quarter of an obstetrician's).

CHOICE SAYS: Check carefully how any excess is applied; it can make a big difference. For example, with some of the MBF family schemes, the company applies the excess per person for two people. NATIONAL MUTUAL has an excess for the first three hospital stays in a year, and for MEDIBANK PRIVATE you pay an excess just once each calendar year.

■ **Are any conditions excluded** or have long waiting periods? To cut costs many funds offer schemes which exclude a range of (expensive) treatments such as joint replacement.



(See *And the future?*, left.) Also check whether the conditions are excluded completely, or just for treatment in a private hospital.

CHOICE SAYS: These 'exclusory' policies are a way funds tamper with the principle of 'community rating' — see *And the future?* for an explanation of the disadvantages of this.

■ **Are there financial or other limits** to treatment for certain conditions? Look for limits to the number of days of cover in a year, both overall and for certain conditions (psychiatry, for example).

■ **What are the problems** moving from one fund to another? Originally the conditions were relatively simple — new waiting periods for any extra benefits offered by the new scheme. With hospital contracts, this gets much more complicated.

We are concerned that you should still be able to switch to another fund with different agreement hospitals without waiting periods needing to be served. This is critical to keeping the market competitive. And if you want to move because your existing fund is terminating an agreement with a particular hospital, it can get even more difficult. Check the situation before you decide to move from one fund to another.

■ **For ancillary cover,** what are the limits for each type of service, both per visit and overall? Are the limits per family or per person? And are there any restrictions on the service providers you can use to get the maximum benefits?

■ **It's likely there will be other changes,** some of which may not benefit consumers. They include wider use of agreements with doctors about fees (which could help to reduce or eliminate out-of-pocket costs, but could also see funds having a greater say in your treatment), higher premiums for people joining later in life and the extension of schemes which exclude cover for certain conditions.

These changes are likely to cause further confusion about what's on offer from health funds, and we would like to see the introduction of a *key features statement* attached to each policy, covering the areas discussed above. Providing information in a standard form would make it easier to compare products if you're trying to choose a health fund for the first time as well as when switching from one scheme to another.

NOT TOO LATE

■ Although you may have missed the start of the tax year (July 1), you can still minimise the 1% surcharge penalty or maximise your incentive payment by taking out insurance now. Both the surcharge and the rebate are given pro rata for the time you're insured. So, for example, if you have insurance for six months, you could get half the incentive (or pay only half the surcharge due).

Thank you

Thank you for all the letters you sent us about your health care experiences in response to our request in January CHOICE. What you told us gave great weight to our arguments at a recent inquiry into private health insurance, and has helped us shape our direction in arguing for further changes.

The way the health system is financed and organised, plus changes to what health funds tell you about their products, are key areas on which we'll be focusing in the near future.

Childbirth choices

If you've just found out you're pregnant, you'll have a lot of decisions to make over the next few months. Depending on the services available in your area, you'll have to choose where to have the baby, your antenatal care provider and birth attendant, the type of birth and whether or not to have certain medical interventions. We've gathered the latest information available on the subject to help you make informed decisions.

IN BRIEF

- Having a child in a birth centre is a popular option nowadays, but because they don't exist in all areas, and beds in them are limited where they do exist, you may not be able to get into one.
- Medical intervention in childbirth remains high in Australia. For example, nearly a third of the births in our survey were induced — the World Health Organization suggests aiming for a rate of 10%.

Where and how

DEPENDING ON WHERE YOU LIVE, you may or may not have a choice of where you give birth, just as your choices may be more limited if you don't have private health insurance. Whatever your options are, you need to think about your wishes in the following areas and talk to staff at the potential venues about whether they can be met:

- Freedom of movement during labour ('active labour').
- Presence of support people.
- Whether you can have the same person or team of people with you throughout the pregnancy and delivery ('continuity of care'). A World Health Organization (WHO) report says care, sympathy and physical support by the same person throughout labour can have many benefits, including shorter labour and less medication and intervention.
- Methods of pain relief.
- Attitudes to induction of labour, caesarean section, assisted delivery and episiotomy (cutting the skin around the opening of the vagina to enlarge it and prevent the skin tearing).

- Also ask about the training and experience of the midwife or doctor who'll be looking after you and

delivering the baby. As a rule of thumb, look for a carer who delivers babies regularly — at least once a month, say.

- After the birth, what are practices regarding things such as breast-feeding and rooming in vs putting the baby in the nursery.

Giving birth in a hospital labour ward

Although more women are opting to have their baby at home or at a birth centre, the majority of babies in Australia are born in a hospital labour ward. Our survey reflected this trend — nearly all the women (95%) had given birth in a hospital.

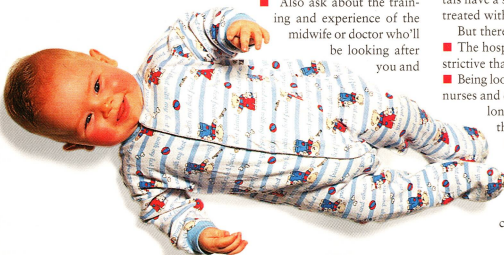
Pros and cons of the labour ward

Among the advantages of giving birth in a labour ward are:

- You're in an environment where medical emergencies can usually be dealt with without delay.
- The widest range of pain medication during labour is available.
- If your baby has a problem, most major hospitals have a special-care unit, where he or she can be treated with little if any delay.

But there are also disadvantages. They include:

- The hospital rules and routines may be more restrictive than at a birth centre or at home.
- Being looked after by changing shifts of midwives, nurses and doctors can cause stress, which can prolong the normal course of labour, though this can also happen in other situations, for example, in a birth centre.
- Intervention (such as augmentation of labour, painkillers, forceps deliveries and episiotomies) tends to be more likely in labour wards than in birth centres or at home.



Care in a public hospital

In larger city public hospitals you may have a choice between an obstetrician (a specialist in pregnancy and childbirth) or a hospital midwife to look after you during your antenatal visits and the birth of your child. Or you're cared for by a team, of midwives and/or medical staff.

Various surveys have shown that most women prefer to see the same care giver (or a small group) during their pregnancy and labour. If you have team care, it's a good idea to get to know as many of the team as possible, since you don't know who will be on duty when you go into labour.



... and in a private hospital

There's no evidence that you get better care or treatment in a private hospital. The main advantage of being a private patient and having private health insurance is that you can see the obstetrician of your choice all through your pregnancy and — in theory at least — for the birth of your child.

But remember there's no guarantee the obstetrician will in fact be available when you're ready to give birth. In our survey, a handful of women were dissatisfied with who delivered their baby, mainly because their specialist hadn't turned up in time for the delivery.



Our survey

Between August and November last year, we sent out more than 2000 questionnaires to various organisations in South Australia involved with prenatal, postnatal and childbirth services, and asked them to distribute them on our behalf.

The questionnaire contained 23 questions to be answered, anonymously, by women who had given birth during the past year.

Our thanks go to all the women who filled in the questionnaire and returned it to us. A special thanks to those who took the time and added comments (sometimes many pages of them). Your views have greatly assisted our research. Some of them are reprinted in *italics* in the article.

Why only South Australia?

We had initially intended to survey women in NSW and SA, as similar studies had already been undertaken in Victoria and WA (we've included some of the findings in Table 2) and we wanted to round out the picture around Australia.

However, we had to abandon the survey in NSW, as unco-operative government health authorities made it impossible for us to have the survey distributed in Sydney, Illawarra and the Central Coast as planned. So the results in Table 1 are based solely on data obtained from 557 questionnaires received from women in Adelaide and Whyalla.

Table 1: CHOICE 1996 Childbirth survey

Survey of 557 women in SA who had given birth between August 1995 and November 1996. The table shows the percentages of women who experienced certain medical interventions in childbirth.

Type of intervention	Emergency procedure (%)	Choice given (%)	Unhappy with explanation or lack of one (%)	Total % experiencing intervention
Acceleration/ augmentation of labour	16	61	3	35
Induction of labour	17	64	3	32
Episiotomy	51	28	20	34
Forceps delivery	65	42	11	13
Vacuum extraction	53	52	6	6
Caesarean section	61	41	0	24

The majority of these (86%) were aged between 21 and 35 years and more than half (56%) reported on the birth of their first child.

We'd like to thank the health authorities in Adelaide and Whyalla for their help and refreshingly unbureaucratic co-operation with the survey.

Table 2: Intervention rate data from other surveys — for comparison

Type of intervention	National statistics (A) (%)	Victorian study (B) (%)	WA study (C) (%)	Midwifery study (Newcastle) (D) (%)	In planned home births (E) (%)
Acceleration/ augmentation of labour	na	33	40	16	na
Induction of labour	21 (F)	28	46	5	na
Episiotomy	na	35	42	13 (G)	4 (H)
Forceps delivery	9	13	7	14	3 (J)
Vacuum extraction	3	2	10	na	3 (J)
Caesarean section	19	18	22	9	3
Electronic foetal monitoring	na	65	65	na	na

na Data not available.

(A) Source: Lancaster P, Huang J, Lin M. (1996), *Australia's mothers and babies 1993* (a report based on 260,578 births nationwide in 1993, as reported to the perinatal data collections in the states and territories).

(B) Source: Brown S, Lumley J, Small R, Astbury J. (1994), *Survey of recent mothers* (a survey of 790 women in Victoria who had given birth in February 1989) as reported in *Missing voices. The experience of motherhood*.

(C) Source: Gilles M, Gee V, Rouse I, Semmens J. (1995), *Consumer Views of Maternity Services: A Survey for Mothers* (a survey of 468 women in WA who had given birth late in 1994), as reported in the Select Committee report on intervention in childbirth, WA 1995.

(D) Source: NHMRC (1996), *Options for effective care in childbirth* (a study of 559 women cared for by visiting midwives in Newcastle, NSW, incorporated in NHMRC report).

(E) Source: Bastian H, Lancaster P. (1992), *Home births in Australia 1988-1990* (a report based on 3021 planned home births reported to Homebirth Australia from 1988 to 1990).

(F) This figure is compiled from statistics for the ACT (31.5%), SA (22.3%), Victoria (19.2%) and WA (23.7%).

(G) In addition, 39% had a perineal tear.

(H) In addition, 21% had a perineal tear.

(J) This figure is for assisted deliveries including both forceps and vacuum extraction.

Choosing an obstetrician

If you want an obstetrician to be involved rather than a midwife, your GP or the public hospital team, and you don't already know one, ask friends or your GP for a recommendation.

Discuss the issues mentioned under *Where and how* on page 26 with them and ask about their fees — they could be substantial. Any amount above the Medicare Schedule fee will have to come out of your pocket; health funds will only reimburse the 25% gap between the Medicare payment and the Schedule fee (15% for visits outside hospital).

If you're not completely satisfied with the first obstetrician recommended, shop around for a different one — you need to be comfortable with their approach.

Shared care

In some hospitals you may have the option of doctors and midwives sharing the care during pregnancy and childbirth.

Some hospitals grant visiting rights to midwives accredited to the Australian College of Midwives Inc (ACMI) — if you want to be cared for by a private midwife you'll need to check whether your hospital will let him or her attend you.

As one of the women in our survey remarked: *"Shared care really is the best of both worlds — one's own midwife for the entire labour, and a doctor for reassurance. Should be offered more."*

WHEN THINGS DON'T GO TO PLAN



Louise's membranes ruptured normally when she was 39 weeks' pregnant, and normal labour began some 12 hours later in hospital. Despite regular contractions, her cervix was slow to dilate and five hours later she was put on a drip to augment labour, and hooked up to an electronic foetal heart-rate monitor, which meant she had to lie immobile on the bed.

After a further 10 hours of stronger, more painful contractions Louise tried using gas for pain relief, but without much success. She felt a strong urge to push despite the fact that her cervix wasn't fully dilated. The decision was made to give her an epidural to try to stop her from pushing, but it took over 30 minutes for the anaesthetist to arrive, by which time

Louise was in considerable distress. After the epidural her cervix failed to dilate further and finally it was decided to deliver her baby by caesarean section.

"I was quite resigned to it at the time and relieved to have a healthy baby," says Louise, "but I had to talk it through with somebody and needed reassurance from my obstetrician that there wasn't anything else I could have done."

Giving birth at home

Relatively few women in Australia choose a home birth. In our survey, just 1% of women reported giving birth at home. The national average of planned home births is fewer than 0.5%, ranging from 0.2% in Victoria to 1.9% in the ACT.

There are probably two major reasons for this low number. First, there's a general perception in the community that giving birth at home isn't as safe as choosing a hospital setting — and if something goes wrong there are no special support services available. But even those who believe in home birth may simply not be able to afford it — midwifery services are not covered by Medicare (see *The costs of childbirth* on page 31).

The pros and cons of home birth

Whether home birth is available to you depends on where you live and the risk level of your pregnancy. Your midwife or GP should be able to help you decide whether it's a viable option for you.

Advantages of a home birth include:

- It's very likely the same carer will look after you throughout your pregnancy and the birth.
- You're in familiar surroundings with no limitations on the number of people supporting you.
- You're in control and free to choose your birth aids.
- You're likely to encounter less medical intervention than in a hospital setting (see Table 2, page 27).

The major disadvantage, of course, is that should serious problems arise for either you or your baby, you may have to travel to a hospital either at an advanced stage of labour or immediately afterwards.

A serious consideration for all births, but particularly at home, is that you and your primary carer need to agree beforehand at what point they will take over the decision-making if things don't go as expected. So you need to be confident that their decisions will be appropriate and not directed by preconceived ideas or agendas other than your well-being and the baby's.

Choosing a midwife

All midwives have to be registered with or endorsed by their state's or territory's nurses' board. It's a good idea also to look for accreditation to ACMI — it's a sign that she or he will have met various criteria relating to registration, experience, competence and ongoing education.

If you have problems arranging for a home birth, the consumer group Homebirth Australia, which has an office in every state, may be able to help you with contacts in your area. Or contact a local home birth organisation.

Giving birth at a birth centre

More and more women are opting for a compromise between a hospital labour ward and a home birth — they're choosing a birth centre: a small unit, usually in the grounds of a larger hospital, where they can give birth in a comfortable, home-like environment, but with the security of all the necessary medical staff and facilities close by, should an emergency arise.

Australia now has about 20 birth centres, and most of their clients are public patients. Some country hospitals have maternity units for low-risk mothers that give a similar service to birth centres. In our survey 3% of the women had their baby in a birth centre.

The staff in birth centres — generally midwives — usually emphasise a natural birth process, where women are encouraged to take control of their labour and choose the way they want to give birth.

The pros and cons of a birth centre

Some of the advantages of a birth centre include:

- Relaxing and overcoming fear is made easier in comfortable rooms with normal beds, chairs, beanbags, mats and cushions.
- You're encouraged to bring your own birth aids such as music, relaxation tapes and massage oil.
- Apart from your companion in labour, you're encouraged to bring other support people you're comfortable with, such as family members or friends.
- Studies have found that women are generally much more satisfied with the type of care in birth centres.

But getting into a birth centre may not be plain sailing:

- Even if you're booked into a birth centre, you may not be able to give birth there if it's fully occupied when you go into labour. Birth centres are usually small and in great demand.
- You may not be accepted into a birth centre because of a medical condition or your history with previous childbirths.
- If certain problems arise during your pregnancy or labour — or you need an epidural — you may have to be transferred to a labour ward.

About 30 to 40% of first-time mothers booked into a birth centre are in fact transferred to a labour ward (the percentage is lower for women who already have a child).

Some hospital labour wards will allow you similar privileges to birth centres, if your condition allows it, and many midwives in a labour ward will go out of their way to accommodate your wishes.

Medical interventions

In the words of the World Health Organization, "In normal birth there should be a valid reason to interfere with the natural process."

In some circumstances medical intervention in childbirth is of course necessary, but in many cases the interventions commonly undertaken in Australia are considered unnecessary. We have one of the highest obstetrical intervention rates in the world. Interventions are performed for many reasons other than medical emergencies: because patients demand them, professionals consider them convenient or they fear litigation, or because of the so-called 'cascade effect', where one intervention early on in labour can lead to more.

Experts in Australia say there's a growing realisation that what constitutes a 'normal' birth covers a wider range of circumstances than was previously thought. This could perhaps lead to a reduction in interventions in future.

In our survey, only one quarter of the women gave birth without intervention.

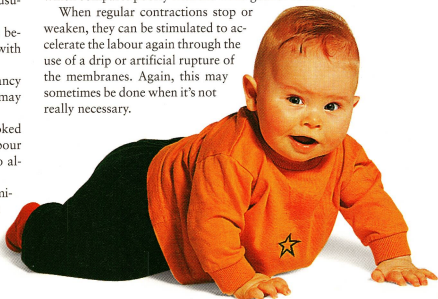
Induction or acceleration of labour

Labour is usually induced if the mother is suffering from certain medical conditions, if the uterine environment is considered unhealthy for the foetus or if a pregnancy carries on past 42 weeks.

Induction shouldn't be adopted as a routine procedure and can't be justified for convenience reasons. The contractions brought on by an induced labour are often stronger, longer and more painful than normal contractions.

In our survey 32% of labours were induced, which compares poorly with the WHO goal of 10%.

When regular contractions stop or weaken, they can be stimulated to accelerate the labour again through the use of a drip or artificial rupture of the membranes. Again, this may sometimes be done when it's not really necessary.



Private vs public

Just over half the women in our survey were private patients in either public or private hospital. More than a third had their baby in a private hospital, while 44% chose a major public hospital. Although the number of women satisfied with their childbirth experience was high overall, private hospital patients:

- Were generally more satisfied than public patients.
- Were slightly more likely to choose the same place and same type of birth if they had another baby in future.

Epiotomy

A vaginal delivery doesn't automatically require an epiotomy (a surgical cut to enlarge the vaginal opening). If labour doesn't progress too quickly and there's sufficient time for the tissues around the vagina to stretch, this incision, or even a tear, can be avoided.

According to the WHO, there is no reliable evidence that routine use of epiotomy has a beneficial effect and it considers an epiotomy rate of 10% would be a good goal to pursue. Yet epiotomy is one of the more commonly performed surgical procedures in the west. One third of the women in our survey had had an epiotomy; similarly high rates were recorded in the other surveys we looked at.

Of the women in our survey who had had an epiotomy, almost three quarters weren't given a choice in the matter. That's probably one reason for the high dissatisfaction rate with the explanation given for the procedure — while only 3% weren't satisfied with the explanation given, 17% reported the procedure hadn't been explained to them at all!

Caesarean section

A caesarean section is an operation in which the baby is delivered through an incision in the mother's abdomen. You can decide in advance to have this done ('elective

caesarean'), in which case it will be performed before labour starts. In unplanned emergency situations, it's performed after labour has started.

Australia has one of the highest rates of caesarean section in the world. The number has risen over the past three decades, reaching a national average of 19% in 1993 (SA recorded the highest rate of 23% and Tasmania the lowest of 17%).

Our survey confirmed the high prevalence of caesareans in Australia. Almost a quarter of the women who participated had had a caesarean section.

Assisted vaginal delivery

When labour doesn't proceed as smoothly as expected, instruments such as obstetric forceps or a vacuum extractor may be used to ease the baby out of the birth canal — this can reduce the need for a caesarean section. While the vacuum extractor is a gentler alternative to forceps, it's significantly less likely to achieve a successful vaginal delivery than forceps.

Electronic foetal heart rate monitoring (EFM)

During labour, the foetal heart rate can be monitored in various ways. A major disadvantage of EFM is that it greatly restricts the woman's movement during labour.



Pain relief

In our survey, the majority of women (85%) had some form of administered pain relief and most (95%) were happy with the explanations given about the choices available.

Types of labour pain relief

- Gas and pethidine were chosen by 43% and 32% respectively of the women in our survey — some used both.

Gas (nitrous oxide), also called 'laughing gas' has been in use for labour pain relief for more than 100 years. However, it doesn't work well for all women, and side effects can include nausea, claustrophobia, disorientation and euphoria.

Pethidine is an opiate that alters the perception of pain and produces sleepiness and mood changes — in some women they're positive, in others negative. Side effects can include nausea, vomiting, a drop in blood pressure and mild respiratory depression, the latter in both mother and baby.

- An **epidural** is a local anaesthetic, injected between the membranes around the spinal cord, which causes numbness in the lower part of the body. In most women, an epidural can relieve labour pains very effectively. Forty six per cent of the women in our survey had an epidural.

Epidurals also have a downside — labour may last longer and they can inhibit your efforts to push.

Caesarean sections can also be performed under epidural anaesthetic. This has various advantages over a general anaesthetic, particularly that you can stay awake during the operation and welcome and nurse your baby straight after the delivery.

"It was hard to choose between general anaesthetic and spinal epidural, but I am very glad that I chose the spinal. It was so exciting to be conscious and the birth was very real, rather than coming to and being given my baby."

Without drugs

Drugs aren't the only pain relievers available to women in labour. For example, one effective method of managing pain without drugs is to move around. Moving around and finding the most comfortable positions during labour have been shown to reduce the need for pain relief.

"I had my second baby at home on my knees leaning on the couch; it was the position I went to naturally. I found the birth by far the easiest and quickest."

Hot and cold packs, using a shower, bath or spa, massage and touching can all assist in pain relief. Other methods include education — knowing what to expect and how to deal with it — acupuncture, acupressure, stress reduction, relaxation, distraction, patterned breathing, visualisation and music.

"That the baby's heartbeat was monitored throughout the labour was the most frustrating aspect. I couldn't move around as I'd planned. The bands were also very tight around my stomach and they made the contractions more difficult to deal with."

During normal labour, monitoring the foetal heart rate intermittently in the traditional way with an ear trumpet or Sonicaid should be sufficient to check the baby's well-being.

Other childbirth procedures

There are many more possible procedures, some of them considered harmful or inappropriate by the World Health Organization, plus others that may be used inappropriately. The following are just a few:

- **Enemas** have no beneficial effects. They're uncomfortable and may damage the bowel.
- **Shaving of pubic hair** doesn't make it easier to stitch the skin or reduce the risk of infection; in fact it may increase the infection risk.
- **Light food and fluids** shouldn't be restricted during normal labour.
- **Routine bladder catheterisation** when or before you start to push during the second stage of labour is unnecessary and might cause infection of the urinary tract. □

INVALUABLE SUPPORT



The Fairfax Photo Library

Mika and Peter's son Keita was born at the birth centre of King George V hospital in Sydney. "I chose the birth centre because I could move to a hospital ward if anything went wrong," says Mika.

But as it turned out, things went just fine, though not quite as planned. Mika had hoped to have both her husband Peter with her at the birth (for emotional support) and her mother (for

physical support — "She's great at back massage"). But as Keita was born two weeks early, Mika's mother didn't arrive here from Japan in time for the birth. So Mika relied heavily on Peter's support.

During her labour Mika used water a lot for pain relief. "I found the arrangements at the birth centre perfect," she says. "I felt more comfortable there than at home. There was a stool in the bathroom to sit on under the shower." Later, in the centre's large spa bath, she found floating helped with the pain. "But in between contractions when I needed firm support I couldn't find a stable position in the water — that's when Peter's support really became essential," she says. "In the bath we established kind of a body language, and once that had happened, it was fantastic.

"I couldn't have done it without him. It felt like we gave birth together. In fact I now think that it might have been much better that there were only the two of us," Mika says.

The costs of childbirth



... as a public patient

As a public patient in a public hospital or birth centre in a public hospital, all the costs relating to your pregnancy and childbirth are covered. This includes the costs for obstetric procedures performed by the medical practitioner on duty, all necessary tests and procedures, and hospital accommodation.

... as a private patient

As soon as you choose your own doctor — regardless of whether you're in a private or public hospital — you're classified as a private patient. In this case your doctor will bill you and you'll have to pay the 25% gap between the Schedule fee and the Medicare rebate (the gap is 15% for doctors' visits before the birth), *plus whatever amount your doctor charges above the Schedule fee*. In a private hospital you'll also have to pay for accommodation.

If you're in a health fund, you may get the 25% gap reimbursed, but not more. You may also get all your accommodation costs and theatre fees from a private hospital reimbursed. But check with the fund before you book into a private hospital whether it has an agreement with the hospital and which of the costs it'll reimburse.

And remember that for most obstetric services you have to have been a member of most funds for at least 12 months before you can make a claim.

... of a home birth

If a doctor attends your home birth you can claim a refund on their fees in the same way as you can in hospital. How much you have to pay for having a registered midwife look after you during your pregnancy, labour and delivery varies from state to state and depends on whether there's a government-funded home birth program in place.

The cost of employing a midwife under such a program may be completely covered by government grants, but as far as we could find out, there are only a few such programs in operation in SA and WA.

This means that the vast majority of women who opt for a home birth can expect to have to pay between \$1000 and \$1700 for the services of a registered midwife. This includes prenatal visits, labour, the delivery and postnatal visits (usually up to about two weeks after the birth).

There's no Medicare rebate available for obstetric procedures provided by a non-medical practitioner, such as a midwife, during a home birth. Only a few health funds reimburse some of the costs.

Medicare Schedule fees

(the 75% rebate is shown in brackets)

■ Antenatal care visit by a doctor (85% rebate).	\$24.50 (\$20.85)
■ Management of labour and either normal vaginal delivery or caesarean where the same doctor provides antenatal care and delivers the baby.	\$391.95 (\$294.00)
■ Management of labour and normal delivery when doctor did not provide antenatal care	\$254.45 (\$190.85)
■ Management of labour and caesarean delivery when doctor did not provide antenatal care	\$458.00 (\$343.50)

And remember, if your gross income is less than \$65,743 per year you will qualify for the Maternity Allowance of \$866.50 per child.



Boning up on calcium

There's more to having strong bones than just drinking milk. Here are the facts about calcium: how much you need, what you can do to increase your intake and what to look for if you need a supplement.



CALCIUM IS ONE OF THE ESSENTIAL minerals your body needs for growth and maintenance, especially for strong bones. Up to early adulthood your body is building up the calcium in your bones. As you grow older, gradual calcium loss from your bones is inevitable.

Women are doubly disadvantaged in terms of calcium loss. They start out with less bone mass than men, and during and after menopause they produce less of the hormone oestrogen, which normally helps to keep calcium in their bones. That's why they're much more at risk later in life of developing osteoporosis — thin, weak bones which fracture more easily. It's estimated that half of all women and a third of all men over 60 will suffer a bone fracture due to osteoporosis.

How much is recommended?

The amount of calcium you should aim for depends on your sex and the stage you're at in life. Children and teenagers need more to build up their calcium stores and strengthen growing bones. Women during pregnancy and when breastfeeding need extra calcium to provide for the needs of their child.

The National Health and Medical Research Council (NHMRC) has set recommended dietary

intakes (RDI) — a daily target — for calcium. These were last revised in 1985 and now some scientists are suggesting they should include a much higher calcium intake for women, especially after menopause. For these women, a higher calcium intake, from both food and supplements, has been shown to slow the rate of bone loss and reduce the risk of fractures.

According to a 1996 Consensus Conference of Australian experts on the prevention of osteoporosis, a woman should aim for about 1500 mg of calcium per day after menopause (unless she's taking HRT or some other therapy to reduce bone loss — see *What is HRT?*, opposite). *Your daily calcium target*, right, shows the recommended level for different people.

Calcium in food

In Australia, the major food sources of calcium are dairy products — milk, yoghurt, cheese and ice cream. Generally speaking, low-fat dairy products have just as much calcium as regular versions, so you don't miss out on calcium if you're cutting back on fat.

Dairy products are the best calcium source, but not the only one. If you need to avoid or prefer not to eat them, there are calcium-enriched non-dairy alternatives.

Check out *How much calcium do you usually eat?*, right, to see how your calcium intake rates. If you're concerned about how much calcium you eat, you may find it useful to talk to a dietitian about ways to increase calcium in your diet.

What to avoid

Some substances can reduce your body's ability to make use of calcium. To get the most from calcium in food (or supplements) it's best to avoid having the following things at the same time as food rich in calcium. This won't always be possible, especially if you're vegetarian:

- Oxalates — in spinach, rhubarb, peanuts.

Bone-boosting tips

- Include at least three serves of dairy products in your diet each day.
- Choose calcium-enriched foods where possible.
- Stay active, with regular weight-bearing activities.
- Maintain a healthy weight, rather than aiming to be too thin.
- Limit the amount of salt you eat, particularly from highly salted processed foods.
- Don't smoke.
- Avoid too much alcohol.
- Consider a calcium supplement if it's not feasible to get the calcium you need from your diet.
- If you're a woman who is experiencing menopause, you may want to consider hormone replacement therapy.
- Finally, if you have questions or concerns about your risk of osteoporosis, talk to your doctor about the best preventive approach for you.

(continued on page 34)

How much calcium do you usually eat?

Which of the foods listed below do you usually eat each day — and how much of them? Use the serve sizes and calcium contents of the foods in the table to make an estimation. Although there will be variations from day to day, your usual or average intake is important.

For example, if you usually have two glasses of regular milk a day:

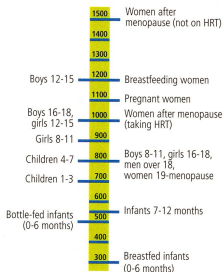
$$1 \text{ glass regular/whole milk (250 mL)} \quad 300 \text{ mg} \times 2 \text{ glasses} = 600 \text{ mg}$$

Figures have been rounded to the nearest 10 mg and not all the foods you eat containing calcium may be listed. A calculator may come in handy to add up your score — compare it to the scale on the right to see if you're eating enough calcium. For the calcium content of specific brands, look at the nutrition information on the label.

Food (serve size)	Calcium (mg) per serve	Number of serves you usually eat each day	Total calcium from each food (mg)
MILK			
1 glass regular/whole milk (250 mL)	300		
1 glass reduced-fat milk (250 mL)	350		
1 glass low-fat or skim milk (250 mL)	300		
1 glass calcium-enriched milk (250 mL)	400		
1 tablespoon skim-milk powder (8 g)	110		
SOY DRINKS			
1 glass soy drink (unfortified, 250 mL)	30		
1 glass calcium-enriched soy drink (250 mL)	290		
CHEESE			
1 cube cheddar cheese (35 g)	270		
1 cube reduced-fat cheese (35 g)	280		
1 cube edam cheese (35 g)	310		
1 cube camembert cheese (35 g)	170		
1 tablespoon parmesan cheese (8 g)	100		
4 tablespoons cottage cheese (100 g)	70		
YOGHURT			
1 tub yoghurt (200 g)	390		
1 tub low-fat yoghurt (200 g)	350		
DAIRY DESSERTS			
2 scoops vanilla ice cream (100 g)	130		
½ cup vanilla custard (150 g)	150		
FISH			
1 sardines (with bones, 50 g)	190		
½ cup canned salmon (with bones, 100 g)	280		
½ cup canned tuna (with bones, 100 g)	10		
OTHER FOODS			
1 medium egg	20		
¼ cup almonds (50 g)	125		
1 tablespoon tahini/sesame paste (20 g)	70		
½ cup baked beans (140 g)	50		
2 slices white or wholemeal bread (60 g)	50		
1 medium orange	40		
½ cup sultanas (100 g)	60		
½ cup cooked spinach or silverbeet (150 g)	75		
½ cup cooked broccoli (125 g)	45		

Total calcium I usually eat each day =

Your daily calcium target



Milligrams (mg) of calcium

WHAT IS HRT?

Hormone replacement therapy (HRT) is usually prescribed to reduce the symptoms of menopause, for example hot flushes and night sweats. It's also the most effective treatment for reducing the risk of osteoporosis, or slowing down its progression, in women who have been through the menopause. It involves replacing lost oestrogen and progesterone with a combination of hormones in a pill, a patch or an implant under the skin.

Pros — HRT slows down the rate at which calcium is lost from bones. The calcium you eat may also be absorbed more effectively. This makes getting enough calcium from your diet more feasible, as you don't need to eat as much. HRT may also lower the risk of heart disease.

Cons — There is a common concern that HRT causes weight gain. Although any increase in weight is likely to be due to normal aging or fluid retention, if it concerns you, you need to discuss it with your doctor before you start treatment. Breast cancer has also been labelled as a possible risk, but the jury is still out on this. Although scientists can't exclude this possibility, they say that for the population as a whole, the overall benefits to women from taking HRT outweigh a small increase in the risk of breast cancer. If you're considering HRT, ask your doctor about the best treatment options so you can make an informed decision, especially if there's a history of breast cancer in your family.

HRT is not exclusively for women. A small percentage of older men who have bones which fracture easily may also have male hormonal deficiencies that can be treated.



■ Phytates — in beans, peas and lentils, and in minimally processed wholegrain and wholemeal cereals.

■ Large amounts of fibre.

■ Some medications, such as cholestyramine (for treating high cholesterol) and antacids that contain aluminium, can interfere with calcium absorption if taken at the same time. Conversely, taking calcium supplements or eating calcium-rich foods at the same time as some other medications can reduce the effectiveness of the medication — for example, tetracycline for infections, beta blockers for heart conditions and even the common aspirin tablet.

■ Some other minerals (such as iron) tend to compete with calcium for absorption. If you need both iron and calcium supplements it's best to take them at different times of the day.

■ Caffeine can also increase your body's calcium needs — but if you get lots of calcium from your diet, caffeine may only have a minor effect. Adding milk to coffee may go part or all of the way to balancing out the effects of the caffeine it contains.

When do you need a supplement?

Dietary surveys in Australia have shown that some people, especially women, are probably not getting enough calcium. While it's preferable to obtain the calcium you need from your diet, supplements may be of benefit if you find it difficult to get enough from food.

Choosing the best calcium supplement

Here are some pointers to help you navigate through the maze of calcium supplements on the market:

■ Calcium supplements come in various forms and concentrations. The different chemical forms include calcium carbonate, calcium citrate, calcium lactate, calcium gluconate, calcium phosphate and calcium orotate. Each different chemical form contains a different amount of 'pure' calcium — called the amount of 'elemental' calcium. So unless the label tells you

the amount of elemental calcium, it's difficult to compare supplements. CHOICE thinks all labels should clearly show the amount of elemental calcium you're paying for.

■ If you don't like taking too many pills, calcium carbonate supplements may be a good choice as they're highly concentrated. They commonly contain around 600 mg of calcium in one tablet. Calcium phosphate is also a highly concentrated calcium supplement, but it's perhaps less well absorbed.

■ If you choose calcium citrate, calcium lactate or calcium gluconate you may need to take more tablets, as these forms are less concentrated. There is some evidence to suggest that calcium citrate is the most easily absorbed form of calcium supplement. While some manufacturers claim calcium orotate is better absorbed than other forms, these claims are unproven.

■ Calcium citrate may be advantageous for people whose stomachs produce less acid, as is common in



Three supplements based on calcium carbonate — Cal-Sup, SandoCal and Caltrate — are available by prescription under the Pharmaceutical Benefits Scheme. This makes them more affordable for long-term users of medication and people who receive social security payments.



Osteoporosis — not

Insufficient calcium in your diet is only one of many factors which contribute to osteoporosis and bone fractures. The checklist below will give you an idea of what puts you at risk and what you can do to reduce your risk. Which of the following apply to you?

Things you may be able to do something about:

■ Do you get much physical activity?

☐ Yes ☐ No

Regular weight-bearing exercise such as walking, jogging or weight training may help to maintain bone strength. Activity may also reduce the risk of falls and subsequent fractures by promoting co-ordination and balance.

■ Are you underweight?

☐ Yes ☐ No

Keeping your weight unnaturally low by excessive dieting can not only take 'weight' off your bones if you're female, it can also lower your level of bone-protecting oestrogen. If you're a female athlete, very strenuous endurance training can contribute to excessive leanness and a drop in oestrogen, as can some activities which favour a slim figure, such as gymnastics or ballet dancing.

■ Do you smoke?

☐ Yes ☐ No

In women this reduces the effectiveness of bone-protecting oestrogen.

older people. But taking a more common and cheaper calcium carbonate supplement with a meal or a glass of orange juice may help it dissolve just as well.

■ Supplements containing natural sources of calcium such as oyster shell, dolomite and bonemeal may contain contaminating metals such as arsenic, lead or mercury. If you choose this type, check that it has been purified.

■ Added extras in a calcium supplement may not be of any use. Vitamin D, often added to calcium supplements, is essential for calcium absorption, but unless you rarely get outside (as may be the case for some elderly people in nursing homes, for example), you're likely to receive plenty of vitamin D from sunlight. Other ingredients are often added, but they don't necessarily influence calcium absorption.

Safe levels and side effects

You're more likely to get too little than too much calcium from your diet. A total daily intake of

2000 mg is considered safe for healthy people. However, if you've had kidney stones in the past, you shouldn't take a calcium supplement without medical advice — consult your doctor.

Large doses of the less readily absorbed calcium supplements can lead to constipation. Excess gas and bloating are also possible in some people. Changing the type of calcium supplement may help.

When to take it

If you take one calcium tablet per day, it's probably best taken with or just after your evening meal. After you've eaten the stomach generates more acid, which will help dissolve the tablet. An evening supplement provides calcium through the night when there's none coming from your diet, and your body is still losing calcium through your kidneys.

If you take more than one calcium tablet per day, the dosage is best spread over the day to increase absorption. □

t a calcium deficiency

■ Do you drink heavily?

☐ Yes ☐ No

Excessive alcohol can weaken your bones. Regular heavy drinking may also mean you have a poor diet that's low in calcium.

■ Do you eat a lot of salt or animal protein?

☐ Yes ☐ No

A diet too high in salt or protein can cause more calcium to be lost in your urine. Eating less salt, most of which comes in processed foods, and avoiding large serves of meat are good ideas for most people.

Things your doctor can help you with:

■ Are you a long-term user of the medications listed below?

☐ Yes ☐ No

Anticonvulsants and corticosteroids (the latter are commonly prescribed for asthma and rheumatoid arthritis) may reduce the amount of calcium your body can absorb. Check your medication with your doctor.

■ Are you a woman who has experienced serious interruptions to your menstrual periods, other than pregnancy?

☐ Yes ☐ No

The absence of regular periods can mean that bone-protecting oestrogen levels have dropped.

■ Are you a woman who has experienced an early menopause (before age 45)?

☐ Yes ☐ No

This means bone-protecting oestrogen is lost at an earlier age and bones can become thin sooner.

If you ticked 'yes' to any of the above, you may want to focus on what you can change, as this will reduce your chances of suffering osteoporosis.

Things you can't change:

■ Are you a woman?

☐ Yes ☐ No

By age 70, a woman may have lost about 30% of her bone mass. A man is likely to have lost considerably less by the time he's 70, and therefore will tend to suffer from osteoporosis at a more advanced age.

■ Do you have a family history of osteoporosis?

☐ Yes ☐ No

Genetics play a role here. Do you have a close family member (male or female) who has a history of bone fractures?

If you have concerns we recommend you discuss them with your doctor. Although not necessary for everyone, it may be important for people with a high risk of osteoporosis and fractures to have their bone density measured. This provides a much better prediction of fracture risk.



TEST REPORT

A growing number of vacuum cleaners claim to offer health benefits for asthmatics and allergy sufferers. In this article we look at some of them, whether they live up to their claims, and whether they'll really benefit your family's health.



Not so dusty

IN BRIEF

- Vacuum cleaners with special 'allergy' filters do release less dust back into the air than cleaners (generally cheaper models) with no special filters. But you don't have to pay top dollar for this — we found one cleaner which did just as well as some more expensive models, at about half the price.
- No vacuum cleaner will solve all your asthma and allergy problems, and there are other more effective measures you can take.
- We put the cleaners with special filters through our normal tests for dirt removal and ease of use. Despite the high price of most of them, their performance was pretty typical for barrel vacuum cleaners — that is, considerably worse for dirt removal than our reference machine, the upright Hoover Lark.

CARPETS CAN HARBOUR DUST MITE allergens, pollens and pet allergens — all of which can trigger allergic reactions and asthma attacks. Regular vacuuming can help reduce the effects of these health-threatening allergens in your home. However, every time you vacuum, your vacuum cleaner could be blowing the dust containing these allergens back into the air, where they become an airborne health hazard.

The number of Australians suffering from asthma has been conservatively estimated at 10%, but it's increasing, particularly among children. Vacuum cleaner companies are targeting this steadily growing market, offering models with special air filter systems which are claimed to prevent virtually all the dust from escaping from the vacuum back into your home.

Unfortunately, most of the vacs making this sort of claim cost around \$500 or more, so you'd want to be sure they lived up to the claim. We put some of them to the test, and then asked asthma and allergy experts about the implications of the findings for sufferers.

We couldn't test all the relevant cleaners on the market, so we chose several models that made dust-retention claims from some well-known brands, with a cut-off price of \$750 — a very high price for a vacuum cleaner. We also included a cheap vacuum cleaner without any special filters or health

claims for comparison. We couldn't include upright models because the tests would have to be different for them.

Do they live up to the claims?

The claims of superior dust control made by the manufacturers were supported by our findings — all the vacs retained more dust than the cleaner we chose for comparison, the PHILIPS Vitall 377 HR 6377/A, which had no special filter. The best were the AEG, the DYSON and the MIELE (see right for model names), which allowed less than 1 mg of dust back into the air for every 100 g sucked up in our test (that's less than 0.001%).

In practical terms, the PANASONIC MC-E861, which has an electrostatic filter, retained the dust just as well as some of those with HEPA filters in our tests (see *Filters* for information about the different types) — and it costs around \$250, compared with the \$500 to \$700 for the other special-filter models tested.

So if you want to buy a vac that can control dust emissions without spending a small fortune, check whether any models you're interested in at the lower end of the price range make any claims about special filters that are backed up by independent test results.

And does it really help sufferers?

None of the asthma and allergy experts we spoke to thought buying a vacuum cleaner with a special filter would be a great help to sufferers. They agree that vacuuming with any vacuum cleaner does increase the amount of airborne dust and allergens. However, most of these airborne particles tend to settle within 20 minutes of vacuuming, so often it's only a problem for susceptible people who are around when the vacuuming is being done.

So while a vacuum cleaner with a special filter might make a difference to some people, asthma expert Dr Euan Tovey, of Sydney University's Department of Medicine, points out there are other more effective — and less costly — strategies for minimising exposure to allergens. *Ways to avoid allergens*, below, lists some of them.

Vacuum cleaners with HEPA filters are generally more expensive than other vacs, and unless money is not an issue, you could probably spend it better elsewhere to alleviate allergy and asthma problems.

Cleaners tested (in alphabetical order)	Price (\$)	Type of special filter
AEG Vampyr 8209 Electronic	600	HEPA
Dyson DC02 Absolute	700	HEPA
Electrolux Excellio Z 5040 Super Silence	600	HEPA
Miele Black Jewel S 448i	700	HEPA
Moulinex 1600 Powerclean AK 7	500	HEPA
Nilfisk GM 330	600	HEPA
Panasonic MC-E861 Clean Filter	250	Electrostatic
Philips Vitall 337 HR 6377/A	200	None

Filters

■ **HEPA** stands for High Efficiency Particulate Air filtration. It's a

worldwide standard for filters which trap 99.97% of particle emissions down to 0.3 microns in size (one micron is one thousandth of a mm). European manufacturers sometimes use the term

S-class instead of HEPA for filters which meet this standard — the difference lies only in the name.

■ **Electrostatic filters** generate an electrostatic charge to attract and trap dust particles.

Note that the filter isn't the only factor in controlling dust emissions — we found that the seals around the filter units accounted for some differences between models, and the best dust controllers had the tightest-fitting seals.

If you would like a HEPA filter but don't want to buy a new vacuum cleaner, it might be worth phoning your cleaner's manufacturer — they may be able to fit a HEPA filter to some of their models, especially more recent ones.

Efficiency drops off as the filter clogs up with dust, so they need to be replaced regularly. Prices for replacement HEPA filters range from around \$35 to \$70, while electrostatic filters tend to be cheaper — the **PANASONIC's** cost around \$9. Filters usually need changing about once a year, but check the manufacturer's instructions.

HEPA
(S-Class)



HEPA (S-Class)



Electrostatic

S-CLASS
FILTER SYSTEM
Electrolux

The \$700 Dyson DC02 Absolute is a novel design — the dirt is sucked into a transparent plastic container and you can see it swirling around. The novelty doesn't make it a better cleaner, though — in our dirt removal tests it performed no better than the Panasonic, for example — which would cost you \$450 less. It's also messy to empty. As with the other vacs with a HEPA filter, it's an awful lot to pay for a pretty average performer.



Ways to avoid allergens

■ Taking up the carpet, at least in the bedroom, is recommended for moderate to severe asthmatics. Hard floors — such as timber, tile, lino or cork — don't harbour dust mites and can be washed easily and effectively. You could also use washable rugs.

If you have a carpet:

- If you can, get someone else to do the vacuuming. If not, wear a dust mask and open windows.
- If you have to empty the vacuum bag, do it outside. Disposable paper bags give less contact with the dust, and some bags seal when removed from the cleaner.

Bedding

The main source of allergens in most households comes from bedding, rather than carpets.

- Air your mattress and bedding daily, as dust mites thrive in humidity.

- Vacuum the mattress regularly.

■ Use bedding materials which can be regularly washed, such as cotton, synthetic or washable wool, and use foam or fibre pillows. Washing bedding in hot water (above 55°C) will kill mites and remove the allergens. Wash blankets, etc, every two months.

- You could try fitting a so-called anti-allergen mattress cover. These can be bought in pharmacies, along with anti-allergen pillowcases and doona covers.

For further information, contact the Asthma Foundation in your state:

ACT	(06) 290 1984	SA	(08) 8362 6272
NSW	(02) 9906 3233	Tasmania	(03) 6223 7725
NT	(08) 8922 8817	Victoria	(03) 9326 7088
Queensland	(07) 3252 7677	WA	(08) 9382 1666

The national office, Asthma Australia, can be contacted on (03) 9326 7088.



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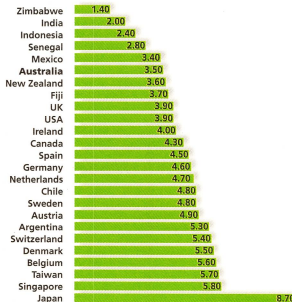
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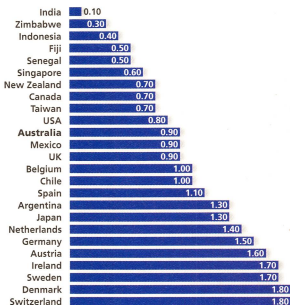
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Telephone: (02) 9577 3333. **Fax:** (02) 9577 3377.

Subscription enquiries: (02) 9577 3277.

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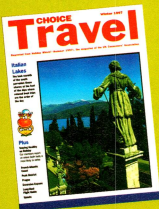
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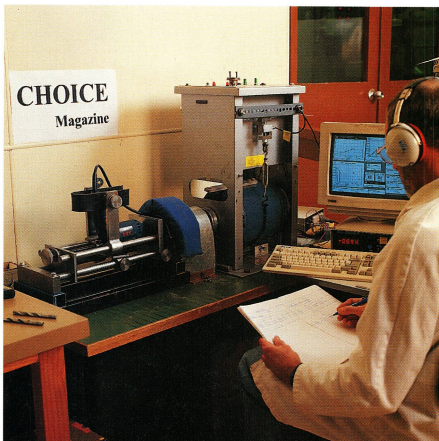
Making an impact

On Fathers' Day (September 7, for those who've forgotten!) some Dads will be content with a lie-in and breakfast in bed, while others would rather be up with the larks drilling holes. For 'boring' fathers, and for the home handyman, an impact drill offers the versatility to drill holes in a range of materials, and can also take the hard work out of screwdriving.

THE DIFFERENCE BETWEEN AN IMPACT drill and other drills is that you can set it so the drill bit vibrates rapidly backwards and forwards as well as spinning around. This 'hammer' action is useful when drilling holes in brick and concrete, because it breaks up the material ahead of the bit, which is then cleared away by the spiral channels on the drill bit.

You won't get very far into stone, brick or concrete without a drill with hammer action. And even the most timid do-it-yourselfer is likely to need to drill holes in these materials for a range of jobs — for example, even if you just want to hang a picture or fix shelf brackets or a garden trellis on a brick or concrete wall.

You shouldn't use the hammer action on timber, steel or plastic, because drilling a hole in these materials requires the drill bit to cut through the material, rather than bashing its way through. So in these situations, the hammer action can be switched off and the drill used normally.



How much to pay?

The market for drills is split between do-it-yourself and 'professional'. For this article we bought mains-powered impact drills costing up to \$250 — most of which fall into the do-it-yourself market. More powerful 'professional' models can cost hundreds of dollars more, and for most home users the DIY type we tested offer enough versatility.

Cordless drills are also becoming more popular. Perhaps surprisingly, for the infrequent user, a mains-powered drill can well be the better choice. Cordless drills can be more expensive, and if you don't use a drill very often, the inconvenience of having to run an extension power cord is unlikely to match the frustration of finding your cordless drill needs charging before you can use it.

There are also cordless impact drills available, but they're more expensive, and because of the power required to drill into masonry, may require more frequent recharging.

A CHOICE tester puts one of the drills through its paces on a computer-controlled dynamometer.

IN BRIEF

■ The DIY drills in this test are versatile: their impact (hammer) action lets you drill through all kinds of material, and their variable speed and reverse action mean you can use them for screwdriving too.

■ Many DIY drills now have a keyless chuck — a great convenience feature.

TECH TALK

■ A drill bit is the metal rod which does the drilling. For most jobs the end has sharp edges which cut material as the bit revolves. Special drill bits with a hard tungsten-carbide tip are used for drilling into masonry. Most drill bits have spiral grooves along them which remove material from the hole as the bit revolves.

■ The drill bit is held in the drill's chuck. This has three jaws which grip the bit and are tightened with a key (or by hand, for keyless chucks).

In use

The weight of a drill is important, but good balance (which means it isn't a struggle to hold it horizontal) can overcome extra weight and make it feel quite comfortable. On the other hand, a heavy, poorly balanced drill can be very tiring to use. To check, hold the drill and operate the controls before you buy.

The top scorers for ease of use were the AEG SBE 500 R, AEG SBE 570 R, BOSCH GSB 16 RE and MAKITA HP 1501K. Features contributing to their high ranking were keyless chucks, which make it easier to change drill bits, and auxiliary handles, which allow better control. They're also well balanced and reasonably light, and their controls are easy to operate. However, the BOSCH lost points because it didn't give the steady, slow, controlled power required for screwdriving.

Most of the drills come with a cord around two and a half metres long; very often this won't be long enough and you'll need to use an extension cord. A cord which is too long can be inconvenient when it comes to storing the drill, but we think the longer cords on the BLACK & DECKER KD 564CRE (3.3 m) and DEWALT DW 203 (4.1 m) could be very useful.

WHAT TO BUY

equal	AEG SBE 500 R BEST BUY	\$139
	AEG SBE 570 R	\$179
	RYOBI PD-191VR	\$183
	MAKITA HP 1501K	\$155

The AEG SBE 500 R is our top overall scorer and **Best Buy** if you don't mind its smaller 10 mm chuck (it can't take a half-inch (12.7 mm) drill bit). AEG drills are available nationally from trade outlets and power tool specialists. While the RYOBI PD-191VR has limited availability in BBC Hardware and Mitre 10, it's mainly available from specialist industrial tool outlets. For a drill which may be easier to find, the MAKITA HP 1501K is sold through Mitre 10 stores, and the MAKITA HP 1500K (which is the same apart from having a keyed chuck) is available at BBC Hardware. However, we haven't included the MAKITA 1500K in the *What to buy* list, because it's only \$6 cheaper than the MAKITA 1501K and a keyed chuck is much less convenient.

If you're looking for a cheaper drill, the BLACK & DECKER KD 564 CRE (\$119) and OZITO ID-500VR (\$85) offer lower-cost impact drilling. Although they have neither the power nor the convenience of the models in the *What to buy* list, they would be suitable for many jobs around the home.

We found some of the drills difficult to find in shops, particularly the OZITO, SKIL and STAYER models, and you may need to call around and be prepared to order them.

WHAT TO LOOK FOR



1 Chuck

If you haven't looked at drills recently, the big change is the introduction of keyless chucks as more or less standard. To open or close the jaws on this type of chuck, you hold one section of the chuck in one hand while rotating the other with the other hand.

To fit a drill bit into a keyed chuck you adjust the chuck by hand till the bit is held in place loosely, and then use a key for the final tightening. The problem is that keys go astray, and while all the drills that weren't keyless had storage locations for the keys, a keyless chuck is much easier to use.

2 Speed control

Variable speed is a useful feature to help get the best results when drilling. It's also useful when using the drill as a screwdriver — you need to start slowly or you risk damaging the screw, the special screwdriver bit or what you're working on.

All the drills tested have a trigger to control the speed, which works by reducing the electric power to the drill's motor — at slow-speed settings the drills use less power than at high-speed ones. Some of the drills also have adjustable controls to set the **maximum speed**. This could be useful if you wanted to make sure the drill ran slowly.

3 Trigger lock

All the drills have buttons which **lock the trigger** in the 'on' position. This is essential if you're using the drill in a drill stand, and may make it more comfortable when hand-drilling holes that take a long time to drill (large holes in steel, for example) or when drilling in awkward spaces.

On many drills the lock is on the left-hand side of the main handle next to the trigger, which makes it difficult to operate in left-handed use. Only the BLACK & DECKER KD 564 CRE and DEWALT DW 203 have lock-on switches which can be engaged when holding the drill in your left hand.

4 Switch for normal/impact drilling

This switch turns the impact feature on or off. Turning it on engages a ribbed gear which causes the chuck to move backward and forward as it spins.

5 Reverse action

All the drills tested have a reversing action which rotates the chuck anti-clockwise. Provided the drill can be run at low speeds, this is useful for removing screws, and also drill bits jammed in the hole (but see *Safety tips* on page 45). For convenience you should be able to operate the reversing switch with the same hand that's holding the main handle. It should also have a positive action so it can't be easily knocked into the other position.

Safety gear is essential when using a drill — see *Safety tips* on page 45.





6 Auxiliary handle/depth gauge

An auxiliary handle makes it easier to hold the drill steady. All the handles for the drills in this test clamp to the drills' 'collar' just behind the chuck. There were two types: those which you tighten by twisting the handle (the most convenient), and those where you have to tighten a wingnut. You can also attach a depth gauge to most of the auxiliary handles, this allows you to set the depth to which a hole is drilled.



Bits and pieces

When you're drilling a hole you need to use the right type of drill bit and the right speed. Cutting speeds that are too high can damage a drill bit, and larger bits need to turn more slowly. Exact speeds are difficult to gauge when using a drill, so here we tell you what's suitable in broad terms. A general rule is the harder the material and the larger the bit, the slower the speed.

You can also get a range of attachments to use with drills — from drill stands to grinding wheels. Some attachments work better at higher speeds (grinding wheels, for example). The drills in our test mostly have maximum speeds of around 2500 to 3000 revolutions per minute (rpm), which should be adequate for all materials and attachments. Only the **SKIL 6845H1** and **STAYER TM 368** were significantly below this, with top speeds of 1350 and 1200 rpm respectively. These lower top speeds

will mean they're less good at drilling into materials requiring a high speed, and may mean some attachments operate less efficiently than they otherwise would. However, they offer relatively more power for screwdriving and drilling large holes.

Table 1. Which bit?

Material	Speed to use for drilling holes	Drill bits	Technique to use
Wood	Maximum (slower for holes over 20 mm in diameter)	Standard twist drill bit. For larger holes use spade, power-bore or hole bits.	Use non-impact setting
Metal — steel — aluminium	Medium (8 mm to 10 mm hole), maximum (for smaller holes) Maximum	High-speed steel bits (HSS).	Lubricate the hole with kerosene (or light machine oil for steel). Use non-impact setting
Glass / glass-tile	Slow	Special drill bit.	Drill through pool of turpentine held in with putty dam. Use non-impact setting
Ceramic tile	Slow to medium	Tungsten-carbide tipped bit.	Use non-impact setting
Brick/concrete	Medium to maximum	Masonry drill bit with a tungsten-carbide tip.	Use the impact setting.

IMPACT DRILLS — mains-powered with variable speed and reverse action

1

2

	Brand/model (in rank order)	Manufacturer/distributor	Origin	Target price* (\$)	Warranty (months)	Weight (kg)	Claimed power
	AEG SBE 500 R	Atlas Copco Tools	Germany	139	12	1.6	500
	AEG SBE 570 R	Atlas Copco Tools	Germany	179	12	1.7	570
equal	RYOBI PD-191VR	Ryobi	Japan	183	12	2.1	570
	MAKITA HP 1501K	Makita	UK	155	12	2.0	550
	MAKITA HP 1500K	Makita	UK	149	12	2.1	550
equal	HITACHI FDV 15V (A)	Hitachi	China	165	12	1.9	520
	SKIL 6444	Vermont American	Netherlands	159	12	1.8	550
	BOSCH GSB 16 RE	Robert Bosch	Switzerland	226	12	2.0	550
	BOSCH PSB 450 R	Robert Bosch	Malaysia	135	12	1.9	450
	BLACK & DECKER KD 564 CRE	Black & Decker	UK	119	24	1.5	450
equal	OZITO ID-500VR (B)	Ozito Industries	China	85	12	2.1	500
	SKIL 6845H1	Vermont American	Netherlands	239	12	2.3	500
	DEWALT DW 203	Black & Decker	Singapore	145	12	1.7	450
	STAYER TM 368	Feiner Industrial	Italy	195	12	2.2	520

PROFILES

The profiles are of the models in the *What to buy* list and are in rank order. The prices shown are a good target to aim for when shopping around, based on nationwide price checks in May/June 1997. Anything lower is a bargain. The features mentioned in the profiles are explained in *What to look for* on pages 42 and 43.

AEG SBE 500 R

Price: \$139

Chuck size: 10 mm

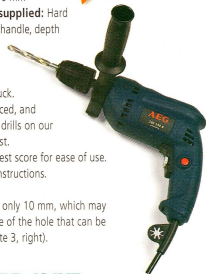
Accessories supplied: Hard case, auxiliary handle, depth gauge, five drill bits.

Good points

- Keyless chuck.
- Well balanced, and lightest of the drills on our *What to buy* list.
- Equal highest score for ease of use.
- Excellent instructions.

Bad points

- Chuck size only 10 mm, which may restrict the size of the hole that can be drilled (see note 3, right).



BEST BUY

RYOBI PD-191VR

Price: \$183

Chuck size: 13 mm

Accessories supplied: Auxiliary handle, depth gauge.

Good points

- Best overall performer.
- Convenient reversing switch (at trigger), with positive action.
- Least noisy of the recommended drills.

Bad points

- None to mention.



AEG SBE 570 R

Price: \$179

Chuck size: 13 mm

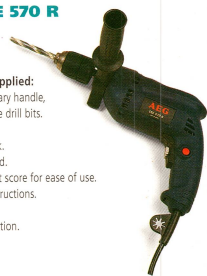
Accessories supplied: Hard case, auxiliary handle, depth gauge, five drill bits.

Good points

- Keyless chuck.
- Well-balanced.
- Equal highest score for ease of use.
- Excellent instructions.

Bad points

- None to mention.



MAKITA HP 1501K

Price: \$155

Chuck size: 13 mm

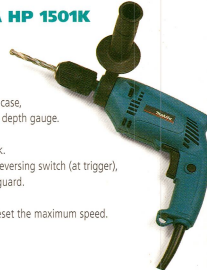
Accessories supplied: Hard case, auxiliary handle, depth gauge.

Good points

- Keyless chuck.
- Convenient reversing switch (at trigger), with protective guard.

Bad points

- You can't preset the maximum speed.



3	3	4	5	6	7	8	9	
Chuck size (mm)	Keyless chuck	Auxiliary handle	Depth gauge	Case	Performance score (%)	Ease of use score (%)	Overall score (%)	Brand/model (in rank order)
10	✓	✓	✓	✓	67	90	74	AEG SBE 500 R
13	✓	✓	✓	✓	64	90	72	AEG SBE 570 R
13		✓	✓		69	80	72	RYOBI PD-191VR
13	✓	✓	✓	✓	65	85	71	MAKITA HP 1501K
13		✓	✓	✓	65	80	70	MAKITA HP 1500K
13		✓	✓	(A)	65	70	67	HITACHI FDV 15V (A)
13		✓	✓		61	80	67	SKIL 6444
13	✓		✓	✓	57	85	65	BOSCH GSB 16 RE
13		✓			56	80	63	BOSCH PSB 450 R
10	✓				57	75	62	BLACK & DECKER KD 564 CRE
13		✓	✓		56	70	60	OZITO ID-500VR (B)
13		✓	✓		56	70	60	SKIL 6845H1
10					51	70	57	DEWALT DW 203
13		✓			52	60	54	STAYER TM 368

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in May/June 1997.

(A) The same model will be available with a carry case from July (model Hitachi FDV 15VK).

(B) A new version of this drill with a keyless chuck and 3 m power cord will soon be available.

1 Weight

This is the weight with the auxiliary handle and depth gauge fitted (if supplied) and the cord resting on the bench. The heavier a drill is, the more tiring it can be to use, especially if it isn't well balanced (see *In use* on page 42).

2 Claimed power

Despite the fact you'll see claims about the power of a drill, the claimed power is notional and not a factor to base your decision on, as it's the combination of speed and torque (the twisting force applied to the drill bit) that really matters to its performance. A higher-speed drill with low torque can have the same power rating as a slower one with more torque. In general what's important when drilling is speed (so long as there's sufficient torque to keep the drill bit turning), while for screwdriving, it's torque which is important.

3 Chuck size / keyless chuck

See *What to look for* on page 42 for the advantages of a keyless chuck.

The AEG 500 R, BLACK & DECKER KD 564 CRE and the DEWALT DW 203 have 10 mm chucks, rather than 13 mm ones. This would restrict the size of hole you could drill using standard drill bits — and means you can't fit a standard half-inch drill bit (12.7 mm).

4 Auxiliary handle

See *What to look for* on page 42 for a description of this feature. Both the AEGs, the HITACHI FDV 15V and the MAKITAS come with handles which can be fitted and adjusted by twisting the handle; with the others you need to loosen and tighten a wing nut, which is more awkward.

5 Depth gauge

Attaches to the auxiliary handle and allows drilling to a predetermined depth.

6 Case

A carrying case can be very useful for protecting your drill, and also to help you keep all the pieces together. There should be space to keep drill bits too.

7 Performance score

We assessed performance by drilling holes in clay and concrete pavers on a test rig which applied a constant force, and by taking torque readings using a dynamometer at each drill's claimed power. These scores were then combined to give the performance score.

8 Ease of use score

Ease of use was assessed by looking at the following: operating controls, changing drill bits, driving and removing screws, and holding and controlling the drill while drilling.

9 Overall score

Performance and ease of use were weighted as follows, and combined to give the overall score:

- Performance: 70%
- Ease of use: 30%

SAFETY TIPS

- Wear **eye protection** when drilling — for example, safety goggles or a full-face mask.
- All the drills in this test are very noisy when used for impact drilling (from 96 dB to 108 dB at the operator's ear level). You should wear **ear protection** (ear muffs or plugs) when using them. The least noisy in our test were the RYOBI PD-191 VR, SKIL 6845H1 and STAYER TM 368.
- When you're drilling into a wall, you need to think about the **wires and pipes** which may be buried there. You can use a detector to check before you drill — these cost from around \$25, and are available from hardware shops.
- Using an **electrical safety switch** will significantly cut your chance of electrocution should something go wrong.
- Using the reversing feature can help remove a jammed drill bit. But only do so at **low speed**, because the drill bit may break or the drill can rotate violently.
- If the drill is turning slowly because you're pushing down hard and it's having to work very hard, you risk **burning out** the motor windings. It can overheat, as the power input is high and the drill's internal cooling fan (which runs at the same speed as the motor) is turning slowly. If your drill gets very hot, stop drilling and wait for it to cool down.

● RECALLS & BANS

If you find a recall or ban not on our list, please let us know. Companies often rent 1800 numbers for a couple of months after the recall is announced. If the number given is no longer operating, phone the manufacturer or retailer direct.

THE PRODUCT: Lockwood Australia has recalled the new-model **Lockwood 001 Deadlatch** (available from March 1997) and the new-model **Whitcho Deadlatch** (available from November 1996).

The problem: The lock mechanism could jam, and the door may not be able to be opened from the inside.

What to do: Contact Lockwood on 1800 241 884. A Lockwood employee or a qualified locksmith will replace your lock free of charge.

THE PRODUCT: Pampas Pastry has recalled all varieties of **Snaffles**.

The problem: Certain older-model sandwich makers may cause the product filling to overheat and squirt from the pastry.

What to do: Don't use the product. Return it to the place of purchase for a refund. For further information, phone Pampas Consumer Service on 1800 033 050.

THE PRODUCT: Akai has recalled the **Akai 67 cm (28") colour television, model number CT2867AT**. The model

and serial number are located on an identification plate on the rear of the set.

The problem: The set could have an electronic fault which is a potential fire risk.

What to do: The television shouldn't be left on while unattended. Contact Akai on 1800 550 115 to arrange for modification to be carried out in your home free of charge. (Have your model and serial number by you when you call.)

THE PRODUCT: Ikea has recalled several **soft toys** sold from January 1, 1997. The toys include:

- **Gosse** (brown bear).
- **Kela** (monkey, dog, cow, penguin).
- **Nackkudde neck cushion** (bear, dolphin).

The problem: The eyes on these products may not be securely attached and could be choking hazard to children.

What to do: Don't let your child continue to use the toy. Return the product to your nearest Ikea store for a full refund or exchange. If you are unable to return the product, destroy it so it can't be used, and dispose of it. For further information, contact your nearest Ikea store.

THE PRODUCT: Defiance Milling has recalled **Defiance Bakers Flour 25 kg** with batch codes 300 to 311 and a best-before date of October 25, 1997.

The problem: The product may contain pieces of wire.

What to do: Do not use the flour. Contact Defiance Milling for a full refund. For further information, phone (02) 9763 1155.

THE PRODUCT: Patchetts Pies is recalling the following pies sold on June 2-4, 1997.

- **Individual pies:** pork; chicken and leek; beef and carrot; steak and kidney; vegetable.
- **Aussie beef pies.**
- **Cornish pasties.**
- **Empanadas.**
- **Quiche Lorraine and quiche vegetable.**
- **Sausage rolls.**
- **Apple turnovers.**

COMPULSORY RECALL

THE PRODUCT: A compulsory recall has been issued on all **Davison Dimethoate 400EC** (an insecticide) sold from October 1, 1995.

The problem: Using this product according to the label instructions may have an unintended harmful effect on plants.

What to do: Contact Davison Customer Service on (08) 9531 2022 to register your name as a supplier/user of this product. Davison Industries will then advise you on return and refund procedures for the product.

■ **Cocktail pies:** pork; chicken; spicy beef.

■ **Family pies:** large pork; medium pork; stand pie; small veal, ham and egg; large veal, ham and egg; chicken; beef and carrot; steak and kidney; beef and burgundy; beef and mushroom.

The pies were sold unpackaged through Woolworths, David Jones, Coles, Franklins, Clancy's Shawfoods, Davids Holdings, and certain hotels, clubs and delicatessens throughout NSW, Victoria and the ACT.

The problem: Pieces of wire were discovered in the flour used in these pies.

What to do: If you still have any of these products, return them to the place of purchase for a full refund. For further information, phone Patchetts Pies on 1800 809 385.

THE PRODUCT: Rover Australia has reissued a recall of **Land Rover Discovery** vehicles with accessory, rear, inward-facing seats from a batch fitted or supplied to these vehicles between 1991 and 1992 in the following Vehicle Identification Number (VIN) ranges:

- LJ 001554 to LJ 002663
- LJ 459374 to LJ 486476

The VIN is displayed on the vehicle identification plate fixed to the radiator support panel under the bonnet.

The problem: The seatbelts fitted to these accessory seats may not conform to Australian requirements.

What to do: The correct seatbelt can be identified by the part number BTR 0632 LUN marked on the Land Rover label secured adjacent to the fixing bolt bracket of the seat belt. If the seatbelt doesn't have this part number, or if you're unsure of the correct identification, call your nearest authorised Land Rover dealer. Belts

without this part number will be replaced by an authorised dealer free of charge. For further information contact Rover.

- Australia regional offices on:
- Sydney (02) 9685 5111.
 - Melbourne (03) 9690 0510.
 - Brisbane (07) 3834 4890.
 - Perth, Adelaide, or Northern Territory (09) 268 2571.

THE PRODUCT: Kmart has recalled all **Denise Austin Trim Riders by Bollinger** sold in its stores.

The problem: The product may injure users. Cracking and breaks may occur in the weld joining the frame and the front leg stabilisers.

What to do: Don't use the product. Return it to your local Kmart store for a full refund. For further information, phone 1800 627 623.

THE PRODUCT: Heinz has recalled **Strained Mixed Vegetable Baby Food (Blue Label)** in 120 g cans, with use by dates of 12.03.00 and 18.03.00.

The problem: A substance which is part of the product has the appearance of small pieces of plastic-like material. However, it is not a foreign material. No health risk has been identified.

What to do: Return the product to the point of purchase for a refund or exchange. For information contact Heinz on 1800 686 646.

THE PRODUCT: Chrysler has recalled **Jeep Cherokee (XJ series)** right-hand drive vehicles from 1993 through 1996.

The problem: Stress cracks may occur in steering components, and in extreme cases the vehicle may exhibit sloppy and/or wandering steering, accompanied by substantial noise.

RETRACTION

THE PRODUCT: Proton Cars Australia has issued a retraction in regard to their **television commercial** which aired in Sydney on Sunday June 15, 1997.

The problem: The commercial referred to a 1,000,000 kilometre warranty. It should have referred to a three-year or 1,000,000 kilometre warranty (whichever comes first).

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What to do: Contact an authorised Chrysler Jeep dealer for inspection and modification of the vehicle free of charge. For further information, contact Chrysler Jeep on 1800 633 766.

THE PRODUCT: Fisher-Price has recalled **Roadside Rescue Police Cars** purchased between February 1, 1997 and May 31, 1997. The toy car forms part of the Little People Roadside Rescue Set. The police car is the only toy in the set involved in the recall.

The problem: Part of the back of the toy police car may crack and break apart, posing a potential choking hazard.

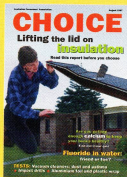
What to do: Don't let your child continue to use the toy. Contact Fisher-Price/Mattel on 1800 800 812 (Monday to Friday, 9 am to 5 pm EST) to find out if you have purchased one of the affected toys. If this is so, you will be asked to dispose of it and will receive a replacement toy free of charge. Don't return the product to retail outlets.

CORRECTION

THE PRODUCT: Foxtel has issued a correction with regard to its **brochure** to potential subscribers promoting the movie *Braveheart*. This follows concern by the Australian Competition and Consumer Commission that the brochure may have misled consumers, in breach of the Trade Practices Act.

The problem: Part of the brochure stated that Foxtel could also offer cheaper phone calls, by connecting you to Telstra Flexi-plans. However, Telstra Flexi-plans are available to everyone. These plans are not restricted to Foxtel subscribers, nor to people responding to a Foxtel promotion.

What to do: If you would like further information about Telstra Flexi-plans, phone Telstra on 13 22 00.



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Test Research provides fee-for-service testing and research on consumer products, services and regulatory issues for other consumer organisations, government and industry. **Manager:** Raja Rajagopal. **Contact:** Jeanette Dwyer on (02) 9577 3333.

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Bold type indicates a test report, normal type indicates other articles.

***** indicates an update of a previous report, additions or corrections to reports, small follow-up items or letters.

For space reasons, the index generally doesn't include Choice Cuts, many other small pieces and Recalls and Bans.

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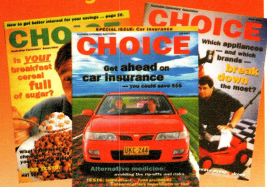
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